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COVER SECTION TIRE & WHEEL TESTS!

32 BULLETPROOF BEADLOCKS FOR B.O.B.

TrailReady HD17s even tougher with ROBAR's Poly-T2 coating

36 GOING PRO

Cooper's new Discoverer STT PRO

38 A FALKEN NEW ALL-TERRAIN

Testing the Falken A/T3W

60 TRAILER TIRE'D

Maxxis trailer tires for the long haul

64 EXTREME MAKEUNDER

Change the vibe of your 4x4 from the bottom up

66 ATTENTION GRABBERS

General Tire's newest 37-incher

68 SHUT IT UP

How to plug a tire puncture

70 RETRO RUBBER

Firestone Knobbies from yesteryear today!

FEATURES & EVENTS

42 AnJKorMan

The Legend of Jeep Burgundy

48 BACKWARD GLANCES

1963 Scout 80 Cab-Top

52 THE LONG AND SHORT OF IT

John Mears' incredible 1974 Bronco



36



52



68



18



38

DEPARTMENTS

6 FIRING ORDER / 8 INBOX /
10 RPM / 14 PARTS RACK /
72 TECHLINE / 78 CALENDAR /
82 TRAIL'S END

VEHICLE TESTS

18 TRIPLE THREAT

Jeep Grand Cherokee vs. Range Rover Sport Td6 vs. Range Rover Sport SVR

TECH & HOW-TO

56 NISSAN NOTES

Datsun/Nissan pickup spotter's guide



ON THE COVER:
Stop the presses! Harry Wagner comes to the rescue with a last-minute hero shot before we resort to a "none more black" cover.



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Peeing In The Gene Pool

Obviously, I've never met Charles Darwin. He died in 1882. But if he were alive today, I like to think he'd be the kind of guy you'd want to have a beer with if for no other reason than to hear about all the Darwin Award stories people shared with him on his Facebook account. "Hey, Chuck, I nominate my cousin for a 'you' award because he dressed in a banana suit and broke into the gorilla cage at the zoo. Here's a video." Stuff like that. Anyway, even though Darwin is gone, his theory on natural selection remains. And although I'm sure most of the little college pukes I see on the news whining for a safe space from accountability



and responsibility are someday heading for an epic Darwin Award of their own, I've nearly been the recipient of one myself on more than one occasion.

I've always fessed up to my mistakes. People make 'em. If you don't, you're either lying or you're not human. (What planet are you from? Do they have ice cream there?) For me, it's not that I don't realize I'm about to do something dumb. In fact, I almost always know when I'm about to kick a hornet's nest. This, in my mind, makes it worse when I actually do it. It's better to have an excuse, even if it's rooted in sheer ignorance. Nope, I know the outcome will be bad and I do it anyway. That's like dumb-squared. Or, like one shop owner told his tech after he tried to bleed the brakes of a Jeep on a lift with the calipers dangling by their hoses and no rotors, that's felony-stupid. Yup, that's me.

If I could pull some sort of excuse out of the woodwork, it would be lack of time. With

three kids in travel sports, this magazine empire to run, and not as much staff as we once had, I'm almost always behind the eight ball in terms of time management. One of my most glorious examples of this was when I had only a few minutes to yank the wheels off my '52 M-170 so I could bring them to the tire shop to have new skins put on 'em. I had two different-sized jack stands in the garage: a big pair and a small pair. My other big pair was buried in my shed under an SM420 and other heavy auto parts. Stop and get the right tool for the job? Not this felony-stupid guy. I removed the front wheels and tires and put the little jackstands under the front axle. Then, I did the driver-side rear. Finally, after pulling the last wheel and tire off, I had to get the passenger-rear corner of the Jeep up just a little higher to slide the big jackstand under the axletube and... whoopsie. The whole thing slid off and smacked my retaining wall. I knew it would happen beforehand. I would've laid 100-to-1 Vegas odds on it. But I did it anyway. And here I am, fessing up to it.

So, which is worse: making mistakes and admitting them and sharing them so others can laugh at you, with you, and perhaps learn from them? Or is it better to act like you've been victimized and blame the world to deflect any semblance of accountability because you were stupid? I think off-roaders are the former. We're the first to fess up to doing something stupid, even if it's a "hold my beer and watch this" moment. Hell, we have our friends videotape it and then put it on YouTube! To me, those who blame others for their failures, shortcomings, or stupidity are just peeing in the proverbial gene pool. Now, if you'll excuse me, I have to remove a tree from my yard. My chainsaw is buried in the shed, but I'm pretty sure my flattie can pull it out with a tow strap if I get a good enough run at it...

—CHRISTIAN HAZEL

CHRISTIAN.HAZEL@FOURWHEELER.COM

PHOTOGRAPHY: CHRISTIAN HAZEL

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JUST SHIP IT!

I just read your editorial about brick-and-mortar parts stores not being able to compete effectively with online parts stores. I fully agree, and it goes beyond that to include specialty shops too. Back in the early '90s when

I was building my first 4x4s, I used to waste a whole day looking for something as simple as a Grade 8 bolt. Not all part stores were equal. I eventually got pretty good at knowing which parts stores carried what. Some had a great selection of difficult-to-find parts like loose hardware and steel brake and fuel lines, and other shops were really only good for filters and oil. These parts stores were up to 20 miles from my garage. I wasted a lot of time and fuel hunting parts down, and I often had to make compromises to get what I needed without having to make a second trip to pickup a special order.

Today, I do a lot less driving around. I plan ahead and order what I need online. Now I get exactly what I need instead of making compromises and getting frustrated. I still go to the parts stores for oil, filters, and other parts that I don't trust the shipping monkeys with, but that's another story.

JOHN CAPPA
CANYON COUNTRY, CA

erwise would've been filled with truck content. So, if you're not into UTVs, you didn't lose any of your regular *Four Wheeler* coverage; just flip the page 'til you see fullsize 4x4s again.

NO YOU TEE VEE?

C'mon guys. You should be tarred and feathered for even thinking about putting a UTV buyer's guide in a 4x4 magazine. No, I'm not going to threaten you all with a cancellation notice. What else would I read on the can? But really, that was a lot of wasted wood. Heck, I'd rather read an article about a bullet and a diff cover.

PAUL SOUZA
VIA EMAIL



Bullet and a diff cover you say? Pew, pew, pew! Shooting auto parts is one of my favorite pastimes. Unfortunately, with the price of ammo nowadays the bullets usually cost more than the parts I'm shooting at. Check out "The Great Diff Cover Shootout" at fourwheeler.com for a cool destructive testing story I did several years ago (bit.ly/1OkOaqf)—and let me know what you'd like me to "test" like this in the future.

MORE YOU TEE VEE

I enjoyed seeing attention given to the ATV/UTV market but was disappointed in two things:

1. Honda had no pricing data.
2. Selection was too limited; you missed a very competitive John Deere.

Thanks for doing such a great job each month.

JESS
PINE, CO

FINALLY!

Our house was built in 1949 as a small "hired help" ranch-style home on a 100 by 100 foot lot in the midst of a typical Central New York dairy farm. Then, 1990 rolled around and my wife deemed the house too small for our family and an addition was in order. My idea was to build a three-car garage in the backyard with a large loft. However, my wife said she'd rather have a new master bathroom and two bedrooms with a deck. She prevailed. She also said if I did build the large garage, she wanted a lockable room in the loft she could retreat to for a little "peace and quiet." You see, at this time, my workshop, such as it was, was located in the basement, as was the one-stall garage (two cars if you wanted to park nose to tail). My garage plans were put on indefinite hold.

By 2013, all three kids were young adults, and wife had just retired, following me by a few years. Now she said I was free to build my garage. And so it was at the age of 66 I



was finally thinking this was going to happen and I called my dear friend and builder.

The garage itself is 24 by 36 feet with what the code officer says is a "useable" loft space of 6 by 12 by 36 feet, and there are loft doors at each end and a pull-down staircase. I think of it as a work in progress because I keep saving to complete the next step.

You may notice the first stall (left to right) is a foot taller than the other two, which allows me to drive my JD 2320 with cab and ROPS bar in (it's also where I store my attachments). In retrospect, I wish I had also put a taller door in the second bay since it would have increased my options. Oh, and I forgot to mention the ceiling height in the stalls is 10 feet, perfect for my 10-foot stepladder when changing bulbs.

Future plans, in addition to a composting toilet, include buying a larger stationary compressor and running hard lines between the stalls and along the workshop back wall. A foldable wall separating the third bay from the other two is also in the future plans so when woodworking the dust that bay will be contained and I'll only need to heat that bay when working in it. Also on my wish list is a safety cabinet for fuels (diesel and gasoline), as well as combustible solvents.

FRANK CAPRISTO, JR
SOMEWHERE IN NEW YORK **FW**



TRAIL WHAT?

What's up with the trail maggot cover on the front of the truck magazine I have been subscribing to since the late '80s?

THOMAS SLEIGHT
SALT LAKE CITY, UT

With this issue, subscribers got a limited-edition cover

highlighting the UTV special insert that was added to the Dec. '15 issue. Other than the different cover (which apparently lots of people didn't like), the UTV insert was all bonus—it didn't eat up any editorial real estate that oth-

WHERE TO WRITE

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RIP

AUTOMOTIVE NEWS



THAT'S INTERESTING

➤ **What does the '17 Ford Super Duty** mean beyond being an all-new truck? To make it happen, Ford is creating 2,000 more jobs and kicking in \$1.3 billion for its Kentucky Truck Plant to handle the job.



➤ **You can now tick the box for** box delete on light-duty Regular Cab Chevy Silverados and GMC Sierras. Like the midsize pickups got.

➤ **By the way, the Chevy** Colorado and GMC Canyon diesels are seeing 31 mpg highway.

➤ **A report called *Collision Avoidance System Market by Device, Technology, Application (Automotive, Aerospace, Railway, Marine, and Construction & Mining), and Region (North America, Europe, Asia-Pacific, and RoW)*** - Global Trend & Forecast to 2020 is a long walk to get to the

fact that the market for collision avoidance systems is likely to be worth \$50 billion by 2020. It was \$31 billion in 2014.

➤ **Buy a new '15 or '16 SRT and** you'll get a one-day full session of hi-po driving instruction at the Bob Bondurant School of High Performance Driving. The program is called The Official High Performance Driving School of Dodge/SRT.

➤ **There's a real list called Most Loved Vehicles in America.** It's by Strategic Vision, and among the vehicles that put hearts and stars and rainbows in Strategic's eyes



were the Jeep Renegade, Nissan Titan, GMC Sierra HD, Chevy Colorado, and GMC Yukon XL.

➤ **Who's using ride-sharing** services like Uber and Lyft? Primarily, The Olds and The Youngs. KPMG, which did a study, noted mobility-on-demand is being driven by millennials and "baby boomers plus."

➤ **Hey, it's more new '16 Jeeps.** This time it's the SRT Night

Edition in Grand Cherokee form, featuring black in strategic places and new 5Ten 20-inch rims, and the Wrangler Backcountry for those of you who like winter themes and decals that read "Backcountry."

➤ **Wishing you could find a city** motorcycle that could also go off-road? Honda has built the City Adventure urban off-road concept that just might be the answer.

»»» WHAT'S HAPPENING IN THE INDUSTRY

➔ **4 Wheel Parts** now has a retail spot in Virginia Beach, Virginia. This equals a grand total of 72 4 Wheel Parts showrooms.

➔ **More Virginia:** Yokohama Tire Manufacturing Virginia LLC in Salem, Virginia, is a zero landfill

operation, meaning nothing gets wasted at the plant—recycle, reuse, or “energy recovery” is the *modus operandi*.

➔ **Omix-ADA** is going to continue to provide \$5,000 grants in 2016 through its Rugged Ridge Trail

Access Program. It has given away \$60,000 in funding since its inception in 2013.

➔ **The Kentucky Association for Manufacturers** named Holley Manufacturer of the Year.

➔ **Weld** has bought HiPer

Technology, which makes performance carbon-fiber wheels for ATVs and UTVs.

➔ **JC Whitney** has awarded CURT Manufacturing a recognition award for being the official towing sponsor of JC Whitney's Centennial vehicle build.



»»» IS IT TRUE?



Photo: Universal Pictures

➔ **Iran** is poised to become the world's 8th vehicle manufacturer in the world?

➔ **More Fast and Furious**

movies in the form of pre-sequels and spin-offs?

➔ **A new program** is coming for the best-of-the-best-

selling Jeeps called Jeep Wave and will include discounts, loaners, and other perks.

»»» YOUR GOVERNMENT AT WORK

➔ **Michigan** might let vehicles with a Michigan historic vehicle plate or authentic Michigan registration plate get into state parks for free if they are holding a car show or such.

➔ **Wisconsin** intro'd a resolution trying to make it official that every second Friday of July is deemed Collector Vehicle Appreciation Day.

✓RANDOM QUOTE:

“AS WAS THE CASE WITH THE FIRST FEW CALENDARS OF THE '60s AND, MORE RECENTLY, IN PETER LINDBERGH'S 2002 CALENDAR, OR PATRICK DEMARCHELIER'S 2008 AND STEVE MCCURRY'S 2013 CALENDARS, THERE ARE NO NUDES.”

—SORRY ANYONE WHO WAS PLANNING TO MAKE THE PIRELLI CALENDAR THEIR ORGANIZATIONAL NAKED ASSISTANT FOR 2016



What You Need to Know About Crashes in 2014

So, this is gonna start off sounding like one giant bummer, but know that there's actually some decent news. The National Highway Traffic Safety Administration crunched numbers on traffic safety in 2014 and found that 32,675 people were killed in vehicle crashes on U.S. roadways, and another 2.3 million were injured in crashes. That said, fatalities have dropped 25 percent between 2005 and 2014, and injuries in that same window are down 13 percent. Police-reported crashes in 2014 rang in at 6.1 million, but 72 percent had only property damage. Distracted driving accounted for 10 percent of all fatalities, while drowsy driving equaled 2.6 percent of fatalities. And speed still kills: 28 percent of the fatalities.



Description

Each issue of Four Wheeler contains a wide range of informative articles including adventure travel in the US and abroad, domestic travel tips and travel coverage, comprehensive new-vehicle testing and evaluations, technical articles designed for four-wheelers of all abilities, as well as how-to maintenance articles, equipment guides and more.

Four Wheeler Support >

What's New in Version 1.0.34

• Bug fixes and performance improvements

Screenshots



Four Wheeler App

Do you realize how amazing it is that we live in an age when you can take *Four Wheeler* with you anywhere, thanks to the *Four Wheeler* app available through the iTunes App Store? We're anywhere you are, and we're everywhere you're going. It's like stalking with consent since we're bringing loads of tech info, product tests, new-vehicle reviews, features, guides, and more that you might need at any point.



Photo: GM

The Army Is Building an Off-Road Chevy Colorado

GM and the U.S. Army Tank Automotive Research, Development & Engineering Center are converting a Chevy Colorado to sport a hydrogen fuel cell and to go through some pretty grueling real-world military testing for a year.

The appeal of a fuel-cell vehicle to the Army includes it being quiet, like as a scout rig, and that it generates water. This one will run a commercial hydrogen fuel-cell propulsion system. For now, enjoy what is the actual image they released to somehow represent this venture.



✓RANDOM QUOTE:

"IT'S CRAZY."

—NEAL WHEAT, USED-CAR MANAGER AT GLOUCESTER TOYOTA, TO AUTOMOTIVE NEWS, ABOUT THE NO-ONE-SAW-IT-COMING MASSIVE RESALE VALUE OF THE DISCONTINUED TOYOTA FJ CRUISER **FW**

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TACO SNUG

SnugTop now has a full line of bed tonneau and cap products in all sorts of styles and configurations ready to go for the popular '16 Toyota Tacoma pickups. Now you can keep your gear safe, dry, locked, and protected with high-quality SnugTop product. **INFO:** SnugTop, 562/432-5454, snugtop.com



WELD IT UP

Although most serious wheelers probably won't select the 20x8.5, 20x10, or 22x9 size, Weld's new one-piece forged REKON XT does come in a sidewall-friendly 17x9 size for 5, 6, and 8-lug axles. The forged construction means higher strength with no excess weight so you get the maximum performance with the minimum drawbacks. **INFO:** Weld, 800/788-9353, weldwheels.com

RADAR LOVE

Radar tires? Never heard of 'em, right? Well, now you have, and they actually come to the table with an impressive background in Baja and short-course racing. In fact, the company's newest Renegade R-7 was designed specifically with lessons learned from its chunkier cousin, the R-5. Available up to a 35-inch-diameter size for 17 to 20-inch wheels, and three-ply sidewalls, stone ejecting bars between the high-void lugs, and a special tread compound designed with off-road survivability in mind top the highlights. **INFO:** Radar Tires, radartires.com



RAD LIGHTING

Rigid Industries all-new Radiance light brings the company's well-known high-quality LED lighting to market at an entry-level price. Radiance lights are constructed with the same high-grade aluminum alloy housing as its high-buck E-Series lights and are packed with features like a black exposed printed circuit board, optimized forward projecting Broad Spot optics that combine the attributes of a spot and flood beam pattern, and backlighting available in white, amber, red, blue, and green. They're available in lengths from 10 to 50 inches.

INFO: Rigid Industries, 855/760-5337, rigidindustries.com

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SPEEDY SAFETY

ATVs are becoming almost as popular on the trail as Jeeps and other fullsize 4x4s. But just because they're popular doesn't necessarily mean everybody transporting them to the trail is doing so safely. However, Speed Strap has something that may help: its complete tie down kits. Available in different varieties in 1, 1½, and 2-inch-wide styles, the 2-inch 17-piece Ratchet-Tie-Down-Pro kit (shown) includes all the stuff you'd need to safely cinch down your ATVs safely and securely. As a bonus, the 1 or 1½-inch versions double as a really handy tie-down for your trail gear inside your vehicle. **INFO:** Speed Strap, 714/774-9444, speedstrap.com



BAG IT

That's one mean bag—a Mean Mother rear wheel bag, that is. It's made from heavy-duty material with adjustable straps and features reflective strips for increased visibility. There's a special anti-theft tag that can accept a padlock to secure your goodies inside the rim of your spare. Plus, the zipper over-flaps help to protect against dust, sand, and rain. As if that wasn't enough, it's even equipped with an adjustable harness and quick-fit clips for fast release and attachment from its mounting harness.

INFO: Mean Mother, 909/476-6068, meanmother.com.au



EZ LED

Auxiliary LED lights are super popular right now. However, not everybody wants to hack into their roof, bumper, or grille to fit them. Rigid Industries not only makes a huge array of LED lighting options for your vehicle, but now it's got the way to cleanly and easily bolt them in your vehicle. Take, for example, the company's new Fog Light mounts for '14-'15 Toyota trucks and SUVs that mounts the company's square lights in the factory fog lamp positions. **INFO:** Rigid Industries, 855-760-5337, rigidindustries.com



GO FLOW

Wanna be able to drive more than 2,000 miles between fill-ups? Then Transfer Flow's new 100-gallon "Hauler" in-bed auxiliary fuel tank system for fullsize diesel pickups is what you need. The unit securely mounts to the bed of your pickup and is *not* a gravity-feed setup but rather uses Transfer Flow's patented Trax 3 operating system to transfer fuel on the fly. Available in diamond-plate aluminum or aluminized steel, the 100-gallon tank measures 54¼ inches long by 27 wide by 20 high so you don't lose bed functionality.

INFO: Transfer Flow, 800/442-0056, transferflow.com **FW**

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By Four Wheeler staff ken.brubaker@fourwheeler.com Photography: Ken Brubaker

FOUR WHEELER OF THE YEAR 2016 CONSISTED of vehicles from two legendary name-plates: Jeep and Land Rover. Both have a long, storied off-road history that is known the world over, and this year's multifaceted, mega-terrain throwdown included the

Jeep Grand Cherokee Limited V-6, Land Rover Range Rover Sport HSE Td6, and Land Rover Range Rover Sport SVR.

Both on paper and in reality, the SUVs in this year's competition were different in their own way, especially in regard to powerplants.

The Grand Cherokee was sporting a 3.6L V-6 gas engine, the Range Rover Sport HSE was propelled by a turbodiesel 3.0L V-6, and the Range Rover Sport SVR had a supercharged 5.0L V-8 engine. However, for all their differences, these vehicles had some surprising



LAND ROVER RANGE ROVER SPORT HSE TD6



JEEP GRAND CHEROKEE LIMITED

TRIPLE THR

common elements, including eight-speed automatic transmissions, adjustable air suspensions, and engine stop-start technologies. Also, each was very luxurious and, as it turned out, pretty darn capable off-road.

As usual, to qualify for Four Wheeler of the Year (FWOTY) a vehicle had to be all-new or substantially revised, have a two-speed transfer case, a production run of 1,500 vehicles in the U.S., and be on sale by March 15, 2016. The '16 Toyota Land Cruiser, with new features including an eight-speed automatic transmission, also qualified, but Toyota declined to provide a test vehicle.

The FWOTY test took place at various locations in Southern California, and our panel of judges rotated into each SUV at regular

intervals. Each judge is an experienced vehicle evaluator who has logged many hours driving new vehicles on- and off-road. Each judge was required to record detailed notes in their official judging book and score each vehicle in a variety of areas. You can read about the specific testing categories and how scoring is structured elsewhere in this story. The end game was to detect each SUV's strengths and weaknesses. To accomplish that end, we drove the vehicles almost nonstop for five days, stopping only to eat and sleep. We drove the vehicles in almost every imaginable



on-road situation, from twisties to highways to stop-and-go traffic, and we pointed 'em to a variety of off-road terrain, including loose-dirt hillclimbs, sand, water, mud, rocks, and snow.

So what's new with these three rigs that qualified them for FWOTY 2016? What qualities did each have that worked? What needs improvement? Which SUV took home the 43rd annual Four Wheeler of the Year trophy? Read on.



LAND ROVER RANGE ROVER SPORT SVR

EAT

Range Rover Sport Td6 vs. Jeep Grand Cherokee Limited vs. Range Rover Sport SVR

3rd Place**JEEP**
GRAND CHEROKEE
LIMITED V-6**What's New**

The 3.6L Pentastar V-6 has been reworked and it debuts in the '16 Grand Cherokee as the standard engine in all trim levels except for the SRT. Features include two-step variable valve lift, cooled EGR, upgraded variable-valve timing, a new intake manifold, high-tumble intake ports, shrouded combustion chambers, eight-hole fuel injectors with optimized atomization, multiple friction-reduction features, and an increased compression ratio of 11.3:1 (yet it still only requires 87 octane fuel). The V-6 also features fuel-saving Engine Stop-Start (ESS) technology, which shuts the engine down when the vehicle is braked to a stop and restarts the engine when the driver's foot is removed from the brake pedal. The engine also sheds weight. Despite the addition of content weighing 13 pounds, the 3.6L engine has shed 4 pounds when compared to its predecessor. The engine boasts a peak increase of 5 hp and a torque improvement of more than 14.9 percent between 1,000 and 3,000 rpm, depending on vehicle application. Fuel economy improves by more than 6 percent. Other functional new features on the Grand Cherokee include electric power steering with customizable settings, weight-reducing aluminum suspension components, and decreased tire rolling resistance.

**WHAT'S HOT:**

Pentastar 3.6L, fuel economy, Quadra-Lift air suspension adjustability, tight structure

WHAT'S NOT:

Quadra-Lift air suspension thud and rough ride at the highest setting, no rear limited-slip or locker

OUR TAKE:

The new, powerful, efficient 3.6L Pentastar V-6 is a fantastic engine and a great complement to the capable Grand Cherokee



➤“IN THE SAND, THE GRAND IS LIGHT, STABLE, POWERFUL, AND ENJOYABLE.”

Ramp and Track

The Grand Cherokee traveled 41½ inches up the 20-degree RTI ramp to earn a score of 361 points. At the track, the 3.6L V-6 hauled the approximately 4,875-pound SUV from 0-60 mph in 8.6 seconds and through the quarter-mile in 16.6 seconds at a speed of 85.8 mph. The Grand's four-wheel disc brakes helped stop the vehicle in 131.1 feet from 60 mph.

Exterior/Interior

We liked the black plastic that's used at the most likely contact points on the exterior of the Grand, like around the wheelwells and bumpers. Plastic can be easily replaced if damaged off-road when compared to repairing or replacing metal components. Our test vehicle was equipped with optional, dealer-installed steel rocker protection, which worked very well. We also liked that the Grand had easy-to-access, high-mounted tow-hooks up front and a recessed tailpipe in the rear that was less likely to get damaged off-road. We also appreciated the four underbody skidplates included with the Off-Road Adventure II Package. From a styling perspective, one judge noted, "The Grand Cherokee still has a fresh look, even since it first hit the streets." When it came to the interior, we liked the simplicity of the switchgear, controls, and instrumentation, but we felt the Limited's luxury level needs to be improved for its price point. "It's a luxury car with a so-so luxury interior. Need to step up the quality of the plastics, but the leather bits are well done," noted a judge. Judges gave big kudos to the comfort and adjustability of the driver seat.

On-Road

Judges filled their books with accolades for the redesigned 3.6L V-6 Pentastar engine that was mated to an eight-speed transmission. "Quick response to pedal," "Great power delivery from the new and improved V-6 and eight-speed very smooth," "New V-6 has nice, broad torque/power and the eight-speed has a gear for any occasion," and "New power is noticeable on the highway," were some of the judges' comments. We were also impressed at the seamlessness and reaction time of the ESS. It's worth noting that the Grand's

best tank mpg was a respectable 23.7 (mostly highway, with some stop-and-go traffic in Los Angeles). The ride quality of the Quadra-Lift air suspension also gathered compliments. "Fantastic ride on pavement," and "Not mushy, not sporty, not luxo, not bad," some judges remarked. Handling was also given high marks. Judges said, "Steering feel and control is top notch," "Nice balance. Feels light and flickable," and "Tracks straight and true. No-drama cruiser."

Off-Road

The Grand's structure impressed us with its solidness whether we were crawling rock trails, blasting over sand, or getting flexed out in the holes on the hill climb. In the sand, the Grand was "Light, stable, powerful, and enjoyable" and "Light on its toes." Even though our tester depended completely on electronic traction control, it impressed us with its capabilities on the trail. "ABS and traction control sound like a jackhammer, but the darn thing motors over obstacles and climbs," a judge wrote. The decent 44.2:1 crawl ratio also contributed to its capabilities. Trail comments included, "Dices through switchbacks on the trail like a UTV" and "Easy to drive on the trail." On the hillclimb almost every

Logbook Quotes

❧ "Packing such a relatively simple (naturally aspirated) engine with such a smart transmission and matching the right gearing really makes this thing work great."

❧ "A selectable rear locker would do wonders and really help bring back the namesake and the lineage that made the Grand Cherokee stand out."

judge agreed there was nothing elegant about the Grand's climb. Ascending the hill required a degree of momentum, but it did make the climb where the Range Rover Td6 failed. While we adored the air suspension's ability to increase the Grand's ground clearance by up to 2 inches and the approach angle by almost 10 degrees at the push of a button, the result was an annoying thud sound at full suspension downtravel. It's a byproduct of the suspension at its highest setting, and it's apparently harmless, but we think it desperately needs to be damped. "Amazingly capable, but the suspension tops out constantly when at its highest setting. Lots of head toss, too,"



wrote a judge. Another judge wrote, "Unsuitably harsh off-road when the suspension is in the tallest setting. The solution is to only use the highest setting when absolutely required to clear obstacles." In the snow, a judge wrote that the Grand was a "blast" and the Goodyear Wrangler All-Terrain Adventure tires offered good traction and decent lateral stability. In regard to tires, it's worth noting that one of the tires did succumb to a tread puncture on a rocky trail. "Decent sidewall, but one tread puncture. Gives pause to reliability," noted a judge.

Bottom Line

With the reworked 3.6L V-6 Pentastar engine under the hood, the luxurious, nimble '16 Grand Cherokee gets good fuel economy while producing surprising power both on- and off-road. Best of all, it's the standard engine, so it won't cost you a dime extra.



2nd Place

LAND ROVER RANGE ROVER SPORT HSE TD6

What's New

The big news for the Range Rover Sport is the 3.0L Td6 turbodiesel engine. This engine has been available elsewhere in the world but has only now made its way to North America, with some tweaks. The engine makes 254 hp and 443 lb-ft of torque, and it achieves an 8 percent increase in overall fuel efficiency. Among other things, the Intelligent Stop/Start-equipped Td6 has a compacted graphite-iron block, one-piece structural aluminum oil pan, two-stage oil pump, revised injector design, and water-cooled turbocharger with new ball bearings, vanes, and nozzles. Further, the injection cycle employs a two-stage process to eliminate the traditional knock associated with diesel engines. Also worth noting is the new low-pressure EGR system that helps cut emissions and improves fuel economy. This system takes gases at low pressure after the DPF filter in the exhaust pipe and feeds them back to the turbocharger inlet. From there, they pass through an intercooler, resulting in a lower peak combustion temperature. To ensure a level of refinement, the Range Rover Sport equipped with the Td6 engine gets dual



WHAT'S HOT:

Powerful and quiet 3.0L turbodiesel, outstanding wheeltravel, excellent on-road manners, very capable off-road

WHAT'S NOT:

Inability to completely nullify traction control, street-oriented tires, no rear limited slip or locker

OUR TAKE:

The 3.0L turbodiesel is one of the best small diesel engines available today, and it's in one of the most refined SUVs of today





isolation engine mounts and an acoustic laminated windshield.

Ramp and Track

The Range Rover Sport Td6 earned a 415-point score on the 20-degree RTI ramp. During 0-60-mph testing at the track, the approximately 4,709-pound vehicle turned a time of 8.5 seconds. The vehicle traveled the quarter-mile in 16.5 seconds at a speed of 85.8 mph. The Sport Td6's four-wheel disc brakes worked in conjunction with the Goodyear Eagle F1 tires to bring the SUV from 60-0 mph in an impressive 120.9 feet.

Exterior/Interior

On the outside, we gave higher than average marks to the easy-to-replace plastic body cladding. We didn't like the low-profile 20-inch-diameter tires, but we did like the wheel design. "Tire size is stupid, but wheel design looks killer," wrote one judge. Complaint: We were stumped at the lack of easily accessible front towhooks on such a legendary nameplate that is infused with off-road capability. Overall, judges really liked the exterior

Logbook Quotes

👉 "Surprising how capable and seamless it is without a true limited-slip or locker. It just flat works on the trail."

👉 "Super smooth and liquid power that just flows."

styling. "Sweet styling, clean lines, beautiful," noted one judge. Regarding the interior, some of the judges' comments included, "Best seats I've sat on," "Everything seems high-end, nice to the touch, and there's a buttery sweet scent of high-quality leather," and "Classy and contemporary." However, many judges complained about the transmission shifter, which seemed needlessly complicated and counterintuitive.

On-Road

The Sport Td6 cleaned house in this category, earning the most points of the three vehicles. The powerful yet quiet diesel engine was one of the reasons, and judges' comments included, "Quietest

diesel I've ever heard" and "Quiet diesel. Not at all intrusive. Pleasure for long trips." The outstanding eight-speed transmission was also a hit, spurring one judge to write, "Rows through gears easily. Like driving electricity." The tight structure of the vehicle was another reason it scored so high. "Confidence-inspiring. Amazing chassis," "Incredibly smooth highway drive. Feels like flying a private jet in calm air," and "Going down road feels like you're in the middle of a melted marshmallow, cocooned in sweet softness," were some of the comments. Steering was "Smooth and precise," and braking was "Very, very strong. Feels like stick-um on the rotors," judges noted. Even with the sliding panoramic roof wide open, the Sport Td6 was refined. "It's even quiet with the sunroof open at 70 mph," wrote a judge. As a bonus, the Td6 returned a best tank mpg of 28.6 during highway driving, including crawling through some Los Angeles traffic.

Off-Road

Judges loved the outstanding visibility from the driver seat of the Sport Td6, which everyone knows is a key aspect of a good off-road vehicle. One judge summed it up by writing, "Love the

👉 "THE SPORT TD6 PROVES THAT A DIESEL ENGINE CAN COEXIST WITH A LUXURY SUV."

Land Rover's A-pillars and huge windshield. The driver is surrounded by large windows and low hood and high seating position." While outstanding on-road, one of the Goodyear Eagle F1 tires succumbed to rock damage. This caused a judge to write, "I have tire anxiety issues with this 4x4, but it's very solid and smooth." And solid and smooth is exactly what the Sport Td6 is on the trail. In the snow, it offered "Excellent traction," on washboard roads it "Eats bumps and smooths them out;" and on rocky trails it demonstrated "No head toss, excessive whirring, clicking of traction aids, or front/rear bias slipping." We quickly found that sand is the Sport Td6's forte and it could effortlessly carve dunes. Judges' comments included, "Effortless cruising in sand," "Like a butler carrying you on his shoulders: Which dune would you like to climb now, sir?" and "I tried to get the Td6 stuck in sand. Impossible!" Part of the formula for the Td6's success off-road is the front and rear wheeltravel of 10.2 and 10.7 inches, respectively. The Sport Td6's nemesis was the hillclimb. The traction control system got all sorts of knotted up in the loose holes on our test hill and the system refused to deliver power to the wheels that needed it. One judge summed it up by writing, "Struggles with offset holes. Brake traction control system stops forward progress." It was on the hillclimb we wished we could completely cancel the traction control on the vehicle.

Bottom Line

The Sport Td6 is an amazing SUV that is happy both on- and off-road. Additionally, the Sport Td6 proves that a diesel engine can coexist with a luxury SUV.

How We Test 'Em

We began our weeklong Four Wheeler of the Year 2016 test by traveling from Los Angeles to Willow Springs International Raceway, near Lancaster, California, where we used a RaceLogic Performance Box to gather acceleration and braking data. We then convoyed to the desert via winding paved roads and along the way gathered data on how the vehicles handled in the twisty environment. For the next three days, we tested the vehicles in a wide range of terrain. We spent time in every type of driving situation you can imagine. From stop-and-go city driving to wide-open highway. Since we're off-road-centric, we spent the majority of time in the dirt, water, mud, sand, and rocks. Each day of driving began shortly after sunup and ended well after sundown. We traveled to both high and low altitudes, we drove in the dark, and this year, for the second time in recent OTY history, we were able to test in snow at high elevation. On the last day, we made the trek back to the Los Angeles area, which completed the test. In the end, we logged almost 1,000 miles in each vehicle.



How We Score 'Em

Our scoring procedure utilizes five weighted categories. Here's the breakdown: 30 percent Trail Performance (how a vehicle performs in specific wheeling environments and off-road-centric features like four-wheel-drive system operation, tires, traction aids, and so on), 25 percent Empirical (RTI, acceleration, braking, price, and so on), 20 percent On Pavement (handling, ride quality, steering feel, and so on), 15 percent Interior (instrumentation, ingress and egress, seat comfort, storage, and so on), and 10 percent Exterior (appearance, stance, body protection, and so on).

Judges' Picks

We asked the judges which one of the three vehicles in this year's test they'd most like to own, and we asked 'em to pony up the reason why. Scoring doesn't matter here. As a matter of fact, it gets ignored. This is all about personal preference. Here's what each judge chose.

Christian Hazel, *Four Wheeler Editor*

For me, the Range Rover Sport SVR seats were so uncomfortable I started thinking of it as a penalty box. The Range Rover Sport HSE Td6 was sublime: comfortable, quiet, economical, powerful, and smooth. But if I really get honest, I'd have to say the **Grand Cherokee Limited V-6** fits my lifestyle best. There's more interior storage than either Range Rover, available Wi-Fi, a great sound system, plenty of rear head and legroom, and although the ride isn't as pillowy, it offers better off-road capability than the Td6. The 3.6L/eight-speed auto is a phenomenal combination of power and economy, and the new engine revisions only make it better. Plus, I could buy two or three Grand Cherokees for the price of the Td6 and SVR, respectively.

Ken Brubaker, *Four Wheeler Senior Editor*

Well, heck, if someone is giving me one of these SUVs, toss me the fob for the **Range Rover Sport SVR**. The SVR's mind-blowing performance both on- and off-road made me giggle like a schoolboy. The SVR offers the ability to make even mundane commuting in any type of weather or terrain a potential thrill ride. Best of all, and surprisingly, the SVR is an animal off-road. I'm down with that.

David Hamilton, *TEN Account Executive*

The **Range Rover Sport HSE Td6** is my top pick for this year's Four Wheeler of the Year. Yeah, yeah, it hiccupped on the hillclimb, had silly street tires, and costs a whopping \$86k (yikes!), but you can't beat the silky smooth highway ride, superior interior accoutrements, and outstanding V-6 turbodiesel engine. To top it off, it excelled in just about every off-road category we threw at it, um, except for the hillclimb.

Corey Simone, *Four Wheeler Network News Editor*

The 4x4 I would take home would be the **Range Rover Sport HSE Td6**. The overall off-road performance, tremendous power, smooth ride, excellent fuel economy, and plush interior make it hard to not love it. With off-road performance in mind and excellent power from the diesel engine, this Range Rover is awesome—until you see the price tag.

Stuart Bourdon, *Jp Technical Editor*

As much as I liked the Jeep Grand Cherokee and the 550hp Range Rover Sport SVR, the rig I would take home would be the **Range Rover Sport HSE Td6**. The Td6's new 3.0L turbo-charged V-6 diesel produces 254 hp and 443 lb-ft of low-end torque. That's nothing to sneeze at, and even more impressive is all that power is channeled through one of the most sophisticated 4x4 systems on the market today. A luxurious interior, outstanding visibility from the driver seat, and crazy amounts of wheeltravel add up to a home run for me.

John Cappa, *Contributor*

All three SUVs in the competition have admirable qualities, and each shines in a different way. Overall, I would have to choose the **Range Rover Sport HSE Td6** as the vehicle I would want to drive home. It has nearly twice the usable wheeltravel of most other production SUVs and an interior that is nothing short of top-tier luxury. It would be hard to beat the visibility, comfort, handling, and convenience of the Rover diesel on a long road trip or 4x4 adventure. The only change I would want to make would be to upgrade to some more aggressive and robust all-terrain tires.

Ali Mansour, *Contributor*

The price points on all three of the contenders

Final Results

	Grand Cherokee	Range Rover Sport Td6	Range Rover Sport SVR
Trail Performance	18.63	17.18	19.42
Empirical	19.82	22.14	21.61
On-Road Performance	14.34	17.34	16.97
Interior	9.90	11.55	11.08
Exterior	6.29	6.55	6.49
Total	68.98	74.76	75.57

are borderline ludicrous. Setting price aside, I'd have to go with the one that delivered the best balance of power and performance. For me, that was the **Range Rover Sport HSE Td6**. It glided atop the sand, performed well in the snow, and handled long stretches of desert trail with ease. The tire and wheel package was not my cup of tea, but they could be easily replaced. Add in a rear locker and figure out how to defeat some of the more invasive electronic nanny controls and you have a vehicle practical for a daily commute but versatile enough for a desert safari.

Steve VonSeggern, *Contributor*

The **Range Rover Sport HSE Td6** was the runaway surprise hit of the group. This is the quietest diesel engine I've yet experienced, and the driving experience is excellent, with mountains of effortless torque and amazing efficiency. The seats are way more comfortable than the torture chamber-sourced sport seats in the SVR and only slightly less accomplished at securing one's body in place during spirited motoring. The wheel and tire package is much better suited to off-the-pavement forays, and the overall look is clean, understated, and significantly less of a circus wagon of conspicuous consumption as the SVR. The SVR is wildly fun and accomplished, both on-road and off, but in the long run I'd be very proud to have a diesel Range Rover Sport HSE Td6 in my garage.



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16 17 18 20

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BLACK ROCK
B.R. 937 Type 8P Steel
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METHOD Mesh
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BOSCH

BOSCH

Winner!

LAND ROVER RANGE ROVER SPORT SVR

What's New

Remember the Four Wheeler of the Year 2014—winning supercharged Range Rover Sport that packed 510 hp and 461 lb-ft of torque? Well, the Sport SVR takes that formula and bumps up the game in a number of areas. The supercharged, direct-injected, Intelligent Stop/Start-equipped 5.0L engine in the new SVR has had the Bosch management system retuned and maximum supercharger boost pressure increased to help deliver a staggering 550 hp and 502 lb-ft of torque. Other SVR features include reduced transmission shift times, larger front air intakes for the twin intercoolers, electronically controlled two-stage active exhaust system, larger exhaust tubing, recalibrated Dynamic Active Rear Locking Differential, Brembo six-piston front brakes, revised suspension air spring piston profile, continuously variable magnetorheological dampers, a new front fascia,

new front bumper, new front fenders, new rear bumper, new rear spoiler that reduces lift, and much more. The SVR still retains the 10.2 inches of front wheeltravel from the air spring-equipped aluminum IFS with Dana centersection, 10.7 inches of rear wheeltravel from the air spring-equipped aluminum IRS with Dana centersection, 33.5-inch water fording capability, and 45.5:1 crawl ratio. Inside, SVR content includes Noble paddle shifters, a Morzine headliner, and heated leather front and rear sport seats.

Ramp and Track

The SVR demonstrated its flexy suspension's capabilities by earning a 482-point score on the 20-degree RTI ramp. This was far more than the other vehicles in this year's competition. At the track, the SVR traveled to 60 mph from a standing stop in a blazing 4.9 seconds and flew through the quarter-mile with a time of 13.3 seconds at 108.8 mph. The four-wheel disc brakes brought the vehicle to a stop from 60 mph in a respectable 120.0 feet. It's worth noting that after a lap at Willow Springs International Raceway, a judge with years of experience behind the wheel of all types of vehicles wrote, "Laps the track like an exotic supercar."

Exterior/Interior

"Mean and nasty" is the way one judge described the exterior of the SVR. We liked its all-business demeanor, and the SVR-specific body mods are well done and differentiate the vehicle from a non-SVR Sport without being look-at-me obnoxious. Judges gave better than

average marks to the easy-to-replace plastic body cladding that's down low in routinely off-road-damaged areas. Inside, judges liked the SVR touches from a visual standpoint but almost overwhelmingly rejected the seats, which cost the SVR some points. Comments included, "Seats look good and have good bolstering but lack enough lumbar support to be comfortable over long distances" and "Seats too firm, side bolsters too tight. Just plain uncomfortable." One judge threw niceties out the window and said, "Pretty sure these seats are from the Spanish inquisition."

On-Road

On the paved road, the SVR is utterly superb in power delivery and handling. "Power is unbelievable" and "Sticks like on rails," were two comments after driving a section of twisty mountain road. To ensure the power and handling can coexist, the SVR has a slew of advanced technologies that include mechanical and electronic controls, and they work seamlessly together. On open road, the vehicle is vault-like and smooth. It's also worth noting that the SVR has a heck of a menacing exhaust note. It wails under throttle but becomes almost imperceptible in the cabin

WHAT'S HOT:

Powerful supercharged V-8, outstanding wheeltravel, luxurious interior, seamless integration of power and electronics

WHAT'S NOT:

Lack of easy to access functional towhooks, 21-inch wheels, price

OUR TAKE:

The 2016 Four Wheeler of the Year





Logbook Quotes

❗ “What in its class can outperform it? Can’t think of anything.”

❗ “Time to buy a lottery ticket. This SVR is now on my bucket list.”



❗ **“THE SVR IS STUPID FUN IN THE SAND. I MEAN STUPID FUN. THIS THING HAS SO MUCH POWER IT’S SCARY.”**

at low rpm. Upon deceleration in Dynamic mode (this mode includes sharper throttle response and more incisive gearshift logic), a controlled fuel supply creates what Land Rover calls a “characterful crackle” through the exhaust. “Think of it as a 4x4 supercar. It’s not supposed to be quiet,” wrote one judge.

Off-Road

The SVR churned through the snow, easily ascended our hillclimb, was steady and true on graded and washboard roads, and proved incredibly capable on rocky trails. Like the Sport Td6, the SVR offered great visibility from the driver seat and was a total blast in the sand. Judges’ comments included, “Sand sultan,” “Made for sand,” and “The SVR is stupid fun in the sand. I mean stupid fun. This thing has so much power it’s scary. If you feel like it’s not enough power, you need a rocket ship.” Overall, judges were impressed by the function of the SVR’s traction control. “Very seamless. Almost invisible electronics,” wrote one judge. The SVR’s off-road performance is also aided by the generous wheeltravel,



which soaked up even the worst terrain. The Terrain Response 2 system, which controls the four-wheel-drive system, worked incredibly well, and we found that the “Auto” setting worked in most situations to instantaneously select the best settings for the type of terrain. Nonetheless, we’d still like a way to completely disengage the electronic controls and have complete control over the

vehicle off-road. The SVR lost points in the Trail Performance category for its lack of easy-to-access towhooks up front and a complicated removable tow point in the rear. The same 275/45R21 tires that helped produce the incredible on-road performance hindered the SVR’s performance off-road. One tire succumbed to sidewall damage and another tire suffered sidewall cuts but continued to hold air. We get the need to offer a street-oriented tire on a performance vehicle like the SVR, but an optional speed-rated all-terrain tire (with a smaller wheel diameter) would be most welcome. In the tires’ defense, part of the issue could be due to the camber changes at the peak of the suspension cycle, which cause the sidewall to make more contact with the terrain below.

Bottom Line

The SVR is an amazing combination of world-class luxury, supercar performance, and dirt-pulverizing intensity. The cost of admission is high for this ride, but cost aside, the SVR is acutely adept at just about every type of driving situation both on- and off-road. This is what makes it the Four Wheeler of the Year for 2016.

Specifications As Tested

GENERAL			
Vehicle/model	Jeep Grand Cherokee Limited	Land Rover Range Rover Sport HSE Td6	Land Rover Range Rover Sport SVR
Base price	\$39,365	\$71,450	\$79,995
Price as tested (see sidebar for details)	\$49,100	\$86,060	\$126,360
ENGINE			
Type	24-valve V-6 with ESS	24-valve V-6 with ISS	32-valve V-8 with ISS
Displacement (ci/liter)	220/3.6	182.6/3.0	305.1/5.0
Bore x stroke (in)	3.77x3.26	3.31x3.54	3.64x3.66
Compression ratio (:1)	11.3	16.0	9.5
Intake/FI	Naturally aspirated/sequential multi-port electronic	Turbocharged/direct injection	Supercharged/direct injection
Mfg.'s power rating @ rpm (hp)	295 @ 6,400	254 @ 4,000	550 @ 4,000
Mfg.'s torque rating @ rpm (lb-ft)	260 @ 4,000	443 @ 2,000	502 @ 2,500-5,500
Mfg.'s suggested fuel type	Regular Unleaded	Low-sulphur diesel	Premium unleaded (91 octane or higher)
DRIVETRAIN			
Transmission	ZF 845RE 8-spd automatic	ZF 8HP70 8-spd automatic	ZF 8HP70 8-spd automatic
Ratios (:1)	First 4.71, Second 3.14, Third 2.11, Fourth 1.67, Fifth 1.29, Sixth 1.00, Seventh 0.84, Eighth 0.67, Reverse 3.30	First 4.67, Second 3.13, Third 2.10, Fourth 1.67, Fifth 1.28, Sixth 1.00, Seventh 0.84, Eighth 0.67, Reverse 3.32	First 4.70, Second 3.13, Third 2.10, Fourth 1.67, Fifth 1.28, Sixth 1.00, Seventh 0.84, Eighth 0.67, Reverse 3.00
Axle ratio (:1)	3.45	3.21	3.31
Transfer case (:1)	MP 3022 2-spd	Magna DD295 2-spd	Magna DD295 2-spd
Low-range ratio (:1)	2.72	2.93	2.93
Crawl ratio (:1)	44.2	43.9	45.5
FRAME/BODY			
Frame	Steel unibody	Aluminum unibody	Aluminum unibody
Body	Steel	Aluminum	Aluminum
SUSPENSION/AXLES			
Front	Short- and long-arm independent, Quadra-Lift air spring and shock assemblies, stabilizer bar/ ZF 7.7-in	Short- and long-arm independent, twin lower links, air springs/Dana M200 7.9-in	Short- and long-arm independent, twin lower links, air springs, CVD with ARC/Dana M200 7.9-in
Rear	Multi-link, Quadra-Lift air springs, independent upper links plus a separate toe link, stabilizer bar/ ZF 7.7-in	Integral link, air springs/Dana M220 8.7-in	Integral link with air springs, CVD with ARC/Dana M220 8.7-in, Active Rear Locking Differential
STEERING			
Type	Electric power-assisted rack-and-pinion	Electric power-assisted rack-and-pinion	Electric power-assisted rack-and-pinion
Turns (lock-to-lock)	3.2	2.78	2.7
Ratio (:1)	16.7	17.62	18.3
BRAKES			
Front	13.0 x 1.30in vented disc, two-piston caliper	15 x 1.34in vented rotor, two-piston caliper	15 x 1.34in vented disc, six-piston caliper
Rear	13.0 x 0.55in solid disc, single-piston caliper	14.4 x 0.98in vented rotor, single-piston caliper	14.4 x 0.98in vented disc, single-piston caliper
ABS	Four-wheel	Four-wheel	Four-wheel
WHEELS/TIRES			
Wheels (in)	18x8.0	20x8.5	21x9.5
Tires	P265/60R18 Goodyear Wrangler All-Terrain Adventure with Kevlar	255/55R20 Goodyear Eagle F1	275/45R21 Michelin Latitude Sport
FUEL ECONOMY			
EPA city/highway	N/A	N/A	13/19
Observed city/highway/trail	16.4	19.1	13.6
DIMENSIONS/CAPACITIES			
Weight (lb)	4,875	4,709	5,143
Wheelbase (in)	114.8	115.1	115.1
Overall length (in)	189.8	191.2	191.8
Overall width (in)	76.5 (84.8 with mirrors)	81.6 (79.4 with mirrors folded)	87.4 (81.6 with mirrors folded)
Height (in)	69.3	70.1	70.1
Track f/r (in)	63.9/64.1	66.5/66.3	66.5/66.3
Minimum ground clearance (in)	8.6 (standard height), 10.4 (suspension position #2)	8.4 (standard height), 10.9 (off-road height)	8.4 (standard), 10.9 (off-road height)
Turning diameter, curb-to-curb (ft)	37.1	39.7	39.7
Approach/departure angles (deg)	26.2 (standard height) 36.1 (suspension position #2, air dam off)/24.0 (standard suspension), 27.1 (air suspension position #2)	24.3 (standard height), 33.0 (off-road height)/24.9 (standard), 31.0 (off-road height)	22.4 (standard height), 30 (off-road height)/22.5 (standard height), 27.3 (off-road height)
Breakover angle (deg)	10.0 (standard height), 22.8 (suspension position #2)	19.4 (standard height), 27.2 (off-road height)	19.4 (standard height), 27.0 (off-road height)
GVWR (lb)	6,500	6,614	6,614
Payload (lb)	1,270	N/A	N/A
Maximum towing capacity (lb)	6,200	7,716	6,614
Seating	5	5	5
Fuel capacity (gal)	24.6	23.5	27.7
PERFORMANCE			
0-60 mph (sec)	8.6	8.5	4.9
Quarter-mile (sec @ mph)	16.6 @ 85.8	16.5 @ 85.8	13.3 @ 108.8
Braking 60-0 mph (ft)	131.1	120.9	120.0
Ramp Travel Index (20-degree, pts)	361	415	482 FW

Options As Tested

Jeep Grand Cherokee Limited

Options as tested: Customer Preferred Package 23H (\$1,995), Luxury Group II (\$4,200), Off-Road Adventure II (\$1,795), Uconnect 8.4 NAV (\$750), Destination Charge (\$995)

Land Rover Range Rover Sport HSE Td6

Options as tested: Front Climate Comfort & Visibility Package (\$2,620), Driver Assistance Package (\$2,900), Extra Duty Package (\$1,750), Tow Package (\$900), 825-Watt Meridian Premium Audio (\$1,850), Sliding Panoramic Roof (\$500), Adaptive Cruise Control with Queue Assist (\$1,295), Shadow Zebano Wood Trim (\$1,800), Destination Charge (\$995)

Land Rover Range Rover Sport SVR

Options as tested: SVR package (\$30,480), Meridian Signature Audio 1,700-watt (\$4,150), Adaptive Cruise Control with Queue Assist (\$1,295), InControl Remote & Protect for 4 years (\$400), Ebony Headliner (\$350), InControl Secure (\$445), Premium Metallic Paint (\$1,800), SVR Carbon Fiber Engine Cover (\$2,000), Santorini Black Contrast Roof (\$650), Carbon Fiber Veneer (\$2,300), Destination Charge (\$995)



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MM-164M



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PRO 2

Deegan 38 wheels and tires by Mickey Thompson were designed in cooperation with racing icon Brian Deegan.

BAJA SERIES TIRES / CLASSIC SERIES WHEELS

STZ

on Classic III

ATZ^{P3}

on SideBiter II

MTZ^{P3}

on Classic Baja Lock

CLAW

on Classic III Black

50K
LIMITED
TREADWEAR
WARRANTY

MM-245

MM-366

MM-489



PRO 4



DEEGAN 38

on Pro 4

MICKEY THOMPSON



MickeyThompsonTires.com



BUG-OUT



BLAZER

Part 5: Bulletproof, ROBAR Poly-T2-coated TrailReady HD17 beadlocks for B.O.B.

By Ben Battles editor@fourwheeler.com Photography: Ben Battles

IN THE PROCESS OF WAITING FOR parts and pieces to fall in line and show up at our doorstep, we had to hit the pause button on the Bug-Out Blazer project for a spell. Lucky us, however, the apocalypse has held off accordingly, and B.O.B. hasn't been looted of its high-dollar parts yet.

We last left off buttoning up B.O.B.'s suspension in preparation for mounting our wheel and tire combination of choice. After considerable hemming and hawing over what we thought might work best on our '88 K5 Blazer and considering every abusive scenario it could possibly encounter, we ended up reverting back to what we knew was a proven component recipe: the super durable Toyo Open Country M/T tire and ultra-rugged TrailReady HD17 beadlock wheel (i.e.: the cockroach equivalent of wheel/tire combinations for end-of-the-world conditions).

The basis of this story involves avoiding inadvertently separating the bead of your tire from your wheel. Doing so is much like getting a really nasty double-feed malfunction in your AR-15—sometimes they can be a super pain to rectify, and it's far from an ideal situation if you're absolutely counting on it to do its job without fail. Case in point: We were reminded of just how fun blowing a bead was on a recent trip to Rocky Mountain Terrain Park in Carthage, Maine, in our '04 Grand Cherokee (Project Grand Score). While poking our way through a downhill, off-camber rock garden, the weight of the Jeep suddenly shifted heavily to the right-front tire, producing the unmistakable "poof" sound of a tire's

air being evacuated quicker than you can say "Damnit!" This particular instance was a pretty random occurrence, one that would've been real hard to predict and, in turn, avoid. We were also surprised that it happened with a fairly conservative 15 pounds of air pressure (what we considered safe), but it just goes to show that tire beads are never truly secure until they're locked in.

We spent the next two hours on the hillside trying to rectify the situation with the factory scissor jack (thought we were being smart leaving the Hi-Lift back at camp to save weight) winch cables running to both the front and rear of the Jeep so it wouldn't slide off the trail or roll over when we jacked it up, and a couple of ratchet straps to help compress the tire and reseal the bead while trying to air it up with an inexpensive Slime-brand compressor. The reason I elaborate on this experience—and why it relates to the B.O.B. plan of coming as close as humanly possible to a "zero failure rate"—is that we wouldn't want to be tasked with the chore of reseating a tire bead if staying safe meant constant, uninhibited forward progress.

So what's the plan with B.O.B.? TrailReady's proven HD17 17x8.5 aluminum beadlock wheels will be heading up our defense systems against blown beads. Industry friend, Stephen Watson, owner of Offroad Design and diehard fan/aficionado of vintage GM iron, originally turned us onto the TrailReady line of beadlock wheels. He also sells them, but as a testament to the product, he runs what he sells in some of the harshest wheeling



⚡ This is what a bad day (or night, in this case) looks like unless you're fully equipped with the tools to deal with it. This particular blown tire bead happened on our '04 Grand Cherokee (Project Grand Score) and was a two-hour, ill-equipped nightmare before we had it rolling on all fours again. Since B.O.B. is being built as a life sustenance vehicle, beadlock wheels are an essential part of the plan to help ensure uninterrupted forward progress.

environments known to man, such as one of the most punishing of all: the annual King of the Hammers (KOH) race. When I asked Stephen to offer up a sum of his experiences with TrailReady beadlocks, here's what he had to say: "I've run lots of flavors of TrailReady wheels, starting with its first 16.5-inch beadlock back when that was a thing. They've all been good, but the HD17 is developed to the point I'm not sure what else we could ask for. We currently have six rigs here on HD17s and have used a lot more than that over the years—we do have some experience. We've raced rocks and desert (or both at KOH), driven tens of thousands of highway miles, and have daily driven on them, and the only problems we've had involved

what most people would call crashing. We rarely even balance the combo since the centering ring makes any reasonably concentric tire run true."

TrailReady HD17s start life as a rugged one-piece casting and feature an extra-thick inner bead lip. Ours measure 17x8.5 inches with 3.5 inches of backspacing, and if our measurements are correct, they should sit right about where we want them to under B.O.B.'s sheetmetal (after some strategic trimming). Clamping the outer bead of the Toyos between the HD17's outer rim lip and beadlock ring are a total of 24 Grade-8 $\frac{1}{16}$ -inch bolts. Like most true beadlock wheels, the TrailReady HD17s don't feature a DOT stamp. We don't expect to

get pulled over by the fuzz for an equipment violation during the apocalypse, though, so it's a non-issue for us.

To avoid eye-catching bling and help our wheels fly under the radar, we shipped 'em off to ROBAR, a company well known for its high-tech and durable firearm finishes. Editor Hazel and I have both had firearms finished by the talented hands of ROBAR gunsmiths, and not only do they look great, they're now protected beyond the capabilities of any factory finishes. Because of its available earth-tone color options and nearly flat sheen—as well

as our past experiences in firearm applications—we choose the company's Poly-T2 finish in "Tan" (since it was a close match to the Blazer's top) for B.O.B.'s wheels.

Poly-T2 is one of the best solutions we've found to weatherproofing guns, but firearms aren't the only application that can take advantage. Poly-T2 is a Teflon-based, modified epoxy coating specifically designed to prevent corrosion in harsh environments. Available in black, tan, dark OD green, gunmetal gray, and a new burnt bronze, it provides corrosion protection that beats the ASTM-B-117 standard for 1,000

hours of salt spray exposure. It also provides maximum lubrication and resistance to galling, seizing, impact, abrasion, and chemical exposure. Poly-T2 is so tough that ROBAR provides an unconditional warranty against corrosion or flaking of the finish for the life of the gun to which it's applied.

Will a 5.56mm round chip the finish? Yep, it sure will (as it would most any finish we'd imagine), but the Poly T2 is measurably more durable than a standard powdercoat finish, and as such, it will stand up far better in any off-road environment or to salty rust-belt roads

during the winter. And thanks to its self-lubricating properties, zombie guts are only a stream crossing away from being completely rinsed off. It's a little pricier than standard powdercoating, but if you want your wheels to stand out and be better protected at the same time, we'd highly recommend one of the specialized coatings from ROBAR as an alternative.

That's it for now. Stay tuned for the next installment for an in-depth look at Toyo's legendary Open Country M/T tire and what it's going to take to fit these 40-inch sneakers underneath B.O.B.

➔ To make sure B.O.B.'s tires stay attached to its wheels, we've enlisted the bead-holding capabilities of the TrailReady HD17 beadlock wheels. Built from a rugged one-piece casting and $\frac{3}{8}$ -inch-thick, billet-aluminum beadlock ring, these wheels have earned a solid reputation for holding up to a severe thrashing. The fitment we chose was the 17x8.5-inch, with an 8-on-6.5 bolt pattern and a 3.5-inch backspacing, but other bolt patterns and backspacings are also available.

➔ The same durability that applies to ROBAR's Poly-T2 finish in the firearms world also lends itself nicely to an off-road application. The low-visibility earth tone may be the biggest attribute to B.O.B., but our TrailReady wheels are also now easier to clean, have a higher level of chip and scratch resistance as compared to powdercoating, and—important if your rig does battle with the white devil (road salt) over the winter months—a much higher level of corrosion resistance.



➔ ROBAR's Poly-T2 coating is available in the tan color our wheels were coated in, as well as black, burnt bronze, gunmetal gray, and dark OD green colors (the latter being the only one not represented here). Poly-T2 is one of many coatings offered by ROBAR. One of our other favorites is its silver-colored, self-lubricating, and astronomically durable NP3 (used extensively by NASA and the aerospace industry), which we like to use on high-wear areas of firearms, like bolt-carrier groups, triggers, and semi-auto pistol barrels. We can easily think of a few automotive applications that would benefit from it as well.



➔ The HD17s come supplied with some pretty nice, heavy-duty angled valve stems, which feature double-nut retention on the inside of the wheel for added insurance. The valve stems sit well inside the face of the wheel, minimizing the potential of one getting ripped out by rocks or trail debris.

☺☺ One of the awesome things about beadlock wheels is that you can mount your tires on them at home without a tire machine. Apply a healthy dose of lube around the inside tire bead to help it slide over the wheel lip. We had actual bead lube on hand, but a little dish soap will do the trick. The Toyos have a rugged and thick carcass and needed a little convincing with a large chrome-plated tire spoon (avoids damaging the finish) to slide over the lip. If we weren't doing this in arctic New Hampshire winter temps, an alternative would be to just let the tires sit in the sun for about 30 minutes to become supple.



☺ With the tire over the wheel rim, we indexed the beadlock ring onto the outer rim lip, started the bolts and washers (both of which were also coated by ROBAR), and snugged them up semi-tight in a crisscross pattern. We used an electric 3/8-inch impact on its lowest setting to save some time here.



☺ Now begins the time-consuming process of torquing down all 24 bolts evenly and in a crisscross pattern. We find that it usually takes four or five hits on each bolt to finally reach the point where the beadlock ring has settled into its happy spot and the torque value will hold at the specified number. In this case, that number was 20 lb-ft. When fully secured, the bolts are recessed in counter-bore holes to protect the bolt-heads from trail garbage.



☺ The last step in the process is airing up the tires—seating the bead and then stopping at whatever pressure you want to run at. We'll end up playing around with air pressures on the street to make sure our Toyos wear evenly, but unlike a non-beadlocked wheel/tire, now we'll be able to take advantage of the traction capabilities afforded by single-digit air pressures off-road without fear of blowing a bead.



☺ Poor B.O.B. This is how we left it after our last installment post-suspension install, looking ridiculous rolling around on borrowed 32-inch Dodge rolling stock. If vehicles had feelings, we don't think it'd be too happy about it. However, B.O.B. is about to gain back some self-respect with the battle-tested wheels and tires it's about to get fit with, so stay tuned. In the next installment, we'll be giving you an in-depth look at what it's gonna take to properly fit the 40-inch Toyos under this Blazer's sheetmetal. **FW**

SOURCES

TrailReady
425/353-6776, trbeadlocks.com

ROBAR
623/581-2648, robarguns.com

Toyo Tires
800/442-8696, toyotires.com

By Ken Brubaker ken.brubaker@fourwheeler.com Photography: Ken Brubaker

GOING PRO

Cooper's new Discoverer STT PRO

COOPER'S NEW DISCOVERER STT PRO IS CURRENTLY THE MOST aggressive tire in the company's light-truck tire portfolio, and we recently had the chance to spend two days abusing the tire on- and off-road in the high country of Colorado. The design and construction of the STT PRO is remarkable, but is its performance as impressive? Read on.

Construction and Design

The STT PRO is the replacement for the popular Discoverer STT. The STT PRO uses Cooper's proprietary three-ply carcass construction in the tread and sidewall, which the company says provides 50 percent more protection against impact damage

than a standard two-ply tire. This system includes two normal plies that run at 90 degrees from the bead and a third Armor Tek3 Protective Ply that overlays the two normal radial plies at a unique angle to maximize carcass protection. And speaking of protection, the STT PRO also has a Rubber Rim Flange Protector that is, quite simply, a raised rubber ring on the lower sidewall



🔗 The STT PRO uses an alternating 3-2 pattern of inner tread ribs that, among other things, help to decrease road noise. In this photo you can also see the Mud Release Dimples, Scallops, Mud Scoops, and raised rubber ribs and pads at the bottom of the tread grooves.

area that helps to protect the wheel and tire from damage while off-road.

The STT PRO is also designed to excel in mud. The tire features a Mud-Flex Design (the back side is ramped to allow the tread block to flex, providing improved control and stability), Mud Release Dimples

(small dimples along the shoulder tread block walls create mini air pockets that help prevent mud from sticking between the tread blocks, thus aiding self-cleaning), as well as Scallops and Mud Scoops (asymmetrical scallops on alternating lugs direct mud into the mud scoops to enhance traction). But since mud isn't the only off-road obstacle, Cooper designed the tire with features that also help in sand, rocks, and loose soil. For example, there is sidewall tread (large cleats of rubber on the shoulder area of the sidewall oriented to promote traction on inclines to reduce tire side-slip) and a Flex Groove (a small, circumferential groove in the buttress region of the tire that generates a designed flex

point in the tire to help provide a smoother ride and allow the tread and sidewall blocks to better conform to obstacles when the tire is aired down off-road). Helping to evacuate mud and stones was also a priority in the design of the tire, and there are wide lateral grooves in the tread, as well as strategically placed raised rubber ribs and pads at the bottom of the tread grooves.

Speaking of tread, the STT PRO uses an alternating 3-2 pattern of inner tread ribs. Why is this important? Well, this pattern offers benefits including reduced road noise, increased stability and handling, great soft surface and mud traction, balanced wear, and reduced tendency for vehicle drift. Finally, the STT PRO has a silica-infused compound (also includes a carbon black mixture that helps provide improved on- and off-road wet traction, shorter stopping distances, and lower rolling resistance), variable-depth siping (helps reduce cutting and chipping at the ends of the sipes by minimizing stress concentrations), and cut and chip compound additives (minimizes abrasions to the tread pattern caused by rocks and debris).



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1. Some of the testing took us deep into the woods on trails that were littered with slippery stones and tree roots. This is where the high-void tread of the STT PRO proved its worth as the beefy tread lugs hooked onto every available traction point and pulled the vehicle forward.

2. Deep water and slippery mud were no match for the STT PRO's aggressive tread. The silica-infused tread compound seemed to be one of the key aspects to the tire working well in wet conditions.

3. Traction on descent is critical when traveling off-road to ensure smooth control of the vehicle. During testing, we found the STT PRO adhered well to the terrain as we navigated down rock ledges.

4. In the dirt of the lunar-type landscape near the Grand Junction airport, the STT PRO stuck like glue.

5. With the STT PRO tire pressure in the low 20s, the tire's built-in Flex Groove helped the sidewall tread blocks contact traction points.

6. The STT PRO did well on rock ledges, offering good traction for a mud-terrain tire.

7. One of the things we appreciated about this test was the access to Cooper's team, including engineers. During *Questions of Day One*, we could ask questions about the tire and get answers straight from the folks who were integral in the design and testing of the tire.

Testing

Cooper was clearly confident in the STT PRO and demonstrated that confidence by inviting us to flog its new tire during the course of two days in a variety of terrain. Base ops was Grand Junction, Colorado, and some of the places we accessed included the Long Slough Reservoir Road in Grand Mesa National Forest, as well as Bangs Canyon. The STT PRO tires were mounted on a fleet of non-Rubicon Jeep Wrangler Unlimiteds. Heavy rain in the days preceding our arrival left much of the Grand Mesa and Long Slough areas waterlogged. The majority of the forest roads were slicker than snot and perfect for testing. The STT PRO had no problem navigating the slippery mud on Grand Mesa, and the built-in Mud Release Dimples, Scallops, and Mud Scoops worked exactly as intended. As we tooled along at more than 30 mph, the tires scooped, cleaned, and repeated the procedure every rotation, offering a good bite into the mud that resulted in outstanding control.

One of the toughest traction tests of a tire is to go from mud to slippery rocks and roots, which we did throughout the afternoon of Day One. The trail was deep in the forest where

SPECIFICATIONS (as tested)

Tire: Cooper Discoverer STT PRO
Size: LT315/70R17
Type: Radial
Load range: E
Max load (lb): 3,195
Approved rim width (in): 8.0-11.0
Tread depth (in): 21/32
Tread width (in): 10.0
Section width (in): 12.6
Overall diameter (in): 34.57
Maximum psi: 65
Weight (lb): 66.6

the sun is filtered through trees, and most of the terrain was damp or soaked with moisture. The STT PRO tires took a beating that day, with wet, muddy tread blocks grabbing at sharp rocks and the Side Biter Cleats latching onto pointy rocks and slippery tree roots. At one particularly slimy uphill section, there was simply nothing for the tires to latch onto and we had to use forward momentum to make the climb. During the ascent, the sidewalls of the STT PRO tires were taking a beating from roots and branches, and it was then that the three-ply sidewalls showed their toughness, suffering no damage. At the end of the day, we saw no chunking of the tread blocks, which says a lot about the STT PRO's ruggedness.

Day Two started with a hilly, lunar-type soft-terrain landscape

near the Grand Junction airport. The STT PRO gripped this terrain with no problem and showed amazing traction on extremely steep ascents and descents. The tread of the tires provided very impressive lateral traction as well, which is critically important when off-camber. The afternoon of Day Two was spent crawling sandstone ledges and exploring rock-strewn trails. Once again, the STT PRO just went about its job, gripping, and pulling. It's also worth noting that there were no tire failures during the two-day test. And since most of us have to drive our rigs on pavement the majority of the time, it's important to note that the STT PRO had very good road manners. We actually spent more time off-road than on-road, but it was obvious that the STT PRO was quiet at speed for an aggressive tire, didn't feel "floaty," offered stable cornering, and tracked very well.

Bottom Line

In the end, we were impressed at Cooper's new Discoverer STT PRO. It has the ruggedness and performance we want off-road, and it demonstrates civility on-road. We're hoping to do a long-term test with the STT PRO soon that will include sand and snow, so stay tuned.

Available Sizes

As of October 2015, the Cooper Discoverer STT PRO is available in 15 to 22-inch wheel diameters in a 29.5 to 37-inch overall diameter. Depending on size, the STT PRO will be either a C, D, or E load range. **FW**

SOURCE

Cooper Tire & Rubber Company
us.coopertire.com

A FALKEN NEW ALL-TERRAIN

Testing the Falken A/T3W

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

FIRST CAME THE OLD FALKEN Wildpeak A/T. It looked like something you'd see on a factory pickup truck on a dealership lot, but it came in sizes up to 37 inches in diameter and flat-out kicked ass in the dirt. In our testing, it actually out-performed many

more-aggressive-looking all-terrain tires and, in many environments, mud-terrain tires. Clearly, Falken did its homework. Then came the much-anticipated Falken Wildpeak M/T. It had a high-void tread design and burly sidewalls, and picked up the ball where the Wildpeak A/T

went to its muddy knees and ran it through the goal posts. Now, there's the Wildpeak A/T3W. A tweener tread—if we're honest—blurring the lines between the A/T and M/T offerings. But the problem with being a tweener is potential for being outshined on either end. So the

Wildpeak A/T3W enters the game with one sibling an all-star athlete and the other an honor-roll genius. Can it walk the walk, or is it all Jan Brady? Marsha, Marsha, Marsha!

To find out, we received a set of fresh, out-of-the-mold 35x12/50R17LTs from Falken and then took stock of our available test rigs in the stable. Our Project Con Artist JK Wrangler is currently down, so we put in a call to AEV for a set of absurdly nice Ram Katla wheels so we could conduct our testing with *Four Wheeler's* '15 Ram Power Wagon. The Ram Katla wheels measure 17x8.5 and feature a Ram-specific 6-inch backspacing to perfectly place a tire of up to 37-inch-diameter inside the factory fender flare. They're made from high-quality cast T6 aluminum and feature a 3,650-pound load rating that was earned with a 40-inch tire. Most wheel companies earn their load ratings with much smaller tires, so consider that when only comparing numbers in a spec chart. These wheels are the real deal if you're looking to really thrash your Ram off road. We brought the wheels and tires down to our local Discount Tire and had the whole thing put together into one drivable package and then put 1,000 miles of dirt, desert, trail, and road under the frametrails.

On the road, the tires were actually much, much quieter than the Goodyear Duratracs the Power Wagon come from the factory wearing. You can hear the tread but just barely. And with a 55,000-mile tread life, you will barely be hearing them for a long time. Naturally, with super-deep, highly siped tread





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1. The 17x8.5 AEV Katla wheels are specifically designed for Ram applications. The centercap is actually cast into the wheel in the same style as new Ram allow wheels, but an extra-thick lip and bead, recessed valve stem location, and a new, revised open lug design that allows you to actually get a tire iron on the lug nuts are just a few of the off-road-specific niceties built into these superb wheels.



3

2. AEV builds its Ram wheels with a 6-inch backsacing, which tucks the tires inside the fender flares, yet provides enough clearance around control arms and other undercarriage components for up to a 37-inch tire. They're built of tough T6 cast aluminum and are rated for 3,650 pounds with a 40-inch tire!

3. The blocky treads of the Falken Wildpeak A/T3W excelled in rock, hard pack, and on the street, but they struggled a bit in soft sand and loose dirt. Check the siped packed full of sand, which cleared pretty easily as soon as they got back on hard soil.

4. The Wildpeak A/T3W features nice, thick three-ply sidewalls and extra lugs that extend down for additional scrub protection. It's a good-looking tire that comes with up to a 55,000-mile tread-life warranty.

blocks the tires performed very well when SoCal was treated to some heavy rains. Standing water was child's play and grip from a stop resulted in only moderate tire slippage under heavy throttle. That's how the wet-weather game is played on asphalt. In the dry, we turned to our favorite twisty switchback mountain road, a private stretch that's open to us, yet closed to the public, to see where the limits of lateral adhesion resided. Granted, pitching an 8,000-something-pound off-road-oriented pickup truck into hairpin corners will make any tire slip, but at the maximum sidewall inflation pressure of 65 psi, the Load Range E test tires we had exhibited some noticeable sidewall flex and a definite lack of high-pitched squealing in the corners. You heard a low-frequency buzzing as the treads chewed and clawed for grip, sliding along the pavement. Canyon carvers these tires ain't, but they also kept us out of the guardrails, and a normal person won't be driving like an idiotic tire-testing automotive journalist, so mission accomplished.

In sandy washes with hard acceleration in 2WD, you can hear the tire tread urgently trying for purchase at street pressure but not a lot of bite coming as quickly as it does with even the Wildpeak A/T. After dropping the pressure to a modest 25 psi, things improved greatly, and we could get the big pig of a truck to hook even with the 6.4L Hemi's throttle mashed to the floorboard. Once up and running, however, we were quickly lulled out of our smugness at the first turn in the wash we encountered. Rather than carve and follow our steering input, the



2



4

SPECIFICATIONS (as tested)

Tire: Falken Wildpeak A/T3W
Size: 35x12.50R17LT
Type: Radial
Load range: E
Max load (lb): 3,195
Approved rim width (in): 8.0-11.0
Tread depth (in): 3/8
Tread width (in): 10
Section width (in): 12
Overall diameter (in): 34.2
Maximum psi: 65
Weight (lb): 69

big truck just kinda slid along with inertia toward the outside of the line, which just happened to be a 3-foot berm wall. We stopped and made a quick switch from 2x4 to 4x4 and found we could zap the throttle to get the front tires to help pull the truck towards the line we were steering it at, but overall we found lateral traction in the dirt and sand somewhat disappointing. Again, part of this comes from the simple fact that there's a whole crapload of mass to control, but truth be told, the Falkens didn't out-perform the factory tires this truck came with.

Perhaps things would be different here had we used a lighter Jeep.

We further dropped the tire pressure down to about 20 psi out back but left the fronts at 25 psi and then hit 4-Lo and engaged the lockers to see how well these tires climbed. In the semi-loose dirt they were good. Not fabulous or stellar, but good. There's some chewing and clawing that goes on before you begin moving forward, so don't expect them to claw up dirt hills like a big cat up a tree. However, when the terrain turned into tighter hard-pack and rock is where these treads really came into their own. It's been our experience that blocky, siped treads like this really excel in rock, and these were no exception. Any tire can work at low air pressures, but it takes a really sophisticated design to grab and claw at street pressures. We found a little rocky loop as gnarly as we dared without risking the Power Wagon's rocker panels and made a succession of passes through, increasing tire pressure 5 psi from 25 psi/20 psi front and rear,

respectively. It wasn't until we got to 40 psi front and 35 psi rear that the tires started giving any hint of slipping. By 55 psi front, 50 psi rear, they were slipping a lot more but still clawing. From that point, all the way up to our street pressure of 60 psi front and 65 psi rear, performance remained constant. Honestly, if you're hitting hard-pack, granite, shale, or especially slickrock, it'll be hard to do better than this tire. Just be forewarned that tight shoulder lug pattern that'll get you to 55,000 street miles or those nice lugs that plow straight through standing water on the street will cost you a little in the sand and dirt. **FW**

SOURCES

AEV
 248/926-0256
aev-conversions.com

Discount Tire
 866/895-8031
discounttire.com

Falken Tire
 800/723-2553
falkentire.com

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2015 F150 4WD	4"	RANRS66500B	\$1542.96
14-15 GM 1500	4"	RANRS66301B	\$1752.95

Skyjacker Suspension Kits	Lift	Part #	Price
07-15 Jeep JK	4"	SKYJK40BPH	\$826.99
07-15 Jeep JK	2.5"	SKYJK25BPH	\$440.99
97-06 Jeep TJ	4"	SKYTJ401BPH	\$556.99

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14-15 Chevy 1500 4WD	6" Knuckle Kit w/ ES Shocks	EXPK1154B	\$1683.99
11-15 Chevy 2500 2/4WD	6" Knuckle Kit w/ ES Shocks	EXPK1085B	\$1807.99
2015 Ram 1500 4WD	6" Stage I Kit w/ ES	EXPK2101B	\$1868.99
07-16 Tundra 2/4WD	7" Stage I Kit w/ ES	EXPK5085B	\$1828.99
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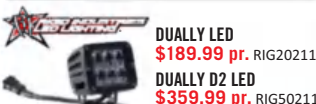
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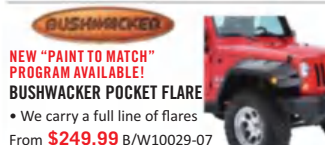
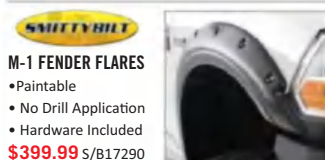
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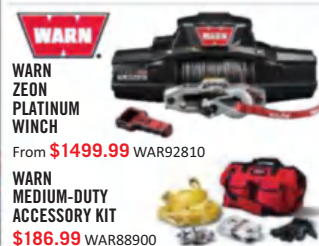
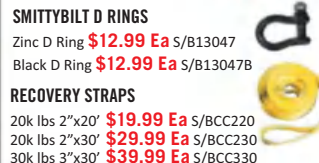
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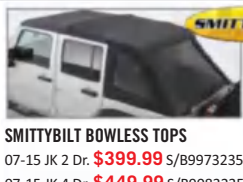
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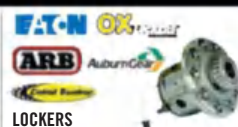


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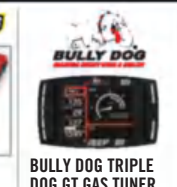
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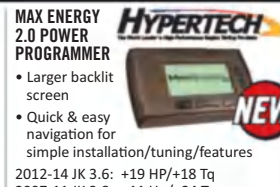
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➤ In the past, a supple suspension on the trail meant your Jeep rode like a marshmallow on the pavement and was a handful off-road at speeds higher than a crawl. Fortunately those days are past us. The Evo Manufacturing Double Throwdown front suspension flexes like mad, providing 14-inches of wheel travel for stability in the rocks and shock damping to eat up whoops.



The Legend Of Jeep Burgundy

By Harry Wagner editor@fourwheeler.com

Photography: Harry Wagner

ONE OF THE MOST MEMORABLE QUOTES IN *Anchorman*, the Will Ferrell movie that is full of them, is “That escalated quickly.” Ferrell’s character, Ron Burgundy, uttered these words following a gang fight with rival news teams. The same quote would equally apply to Nick Nelson’s ’13 JK Unlimited. Nick started with a capable Rubicon model, but before the first oil change was due, he headed to Adam’s High Rollin’ Customs in Reno, Nevada, for a complete makeover.

“THAT ESCALATED QUICKLY...”

AnJKorMan

First on the list was a new set of axles that could live with 40-inch-tall Nitto Trail Grapplers. The factory Dana 44 axles were sold before Nick had a chance to bend them, offsetting some of the cost of adding Currie RockJock Dana 60 axles. The RockJocks came complete with all the mounting brackets to sling them under Nick's JK, reducing the necessary downtime for the build. The Currie axles also use tone rings that retain the factory ABS and ESP and keep the dash of Nick's Jeep from lighting up like a Christmas tree. That is where the similarities with the stock axles end. The RockJocks are bigger in every way, from the ring gear and axleshafts to the tubes and knuckles.

Adding 1-ton axles and 40-inch-tall

tires transforms any JK into a formidable rockcrawler. Nick was looking to do more than just crawl over rocks though. Living in Nevada provides access to endless desert two-track that would take a lifetime to experience at a 100:1 crawl ratio. Fortunately, Evo Manufacturing offers a suspension that is just as capable in the desert as it is in the rocks. Adam's added its Double Throw-down and EvoLever suspension with King coilovers and bypass shocks at each corner. The bypass shocks provide position-specific damping that rides great on the street yet firms up for hard hits off-road. The end result is a Jeep that can take on the streets, the rocks, desert washes, or even the rival evening news team.

1. The 3.6L Pentastar engine in Nick's JK is a big improvement over the previous 3.8L engine, both in terms of power and reliability. The engine is rated at 285 hp, but the Banks RamAir intake and Dynomax exhaust bump that number up even higher.

2. The Evo Manufacturing control arms are stock length, which allows for bolt-in installation. They are far stronger than stock, though, with 2-inch, 0.281-wall DOM construction and Currie Johnny Joints for increased articulation without binding.

3. Good shocks are critical to going fast in the desert, but they aren't cheap. Evo Manufacturing specs out King 2-inch coilover shocks coupled with King 2½-inch three-tube bypass shocks for its Double Throwdown suspension. The shock valving and spring rates are designed specifically for the JK Unlimited, and Nick has further fine-tuned the shocks with the guys from Adam's High Rollin Customs.



4. The Currie RockJock front axle uses a rotated centersection to maximize ground clearance. The axle came complete from Currie ready to bolt in with all of the mounting brackets in place. The 3-inch, 0.375-wall DOM axletubes and high-pinion Dana 60 centersection offer a huge increase in strength, as do the 35-spline 4340 chromoly axleshafts and 1480 U-joints. Nick's axle uses 5.38 Motive gears around an ARB Air Locker.

5. Steering is handled by PSC with some help from Currie Enterprises and Evo Manufacturing. You can barely see the PSC hydraulic ram behind the Evo Manufacturing mount that doubles as a skidplate. The ram is part of PSC's JK steering system that also includes an upgraded steering box that is tapped to work with the ram, a high-volume steering pump, and a larger reservoir. The tie rod and drag link are from Currie. They are constructed from 1½-inch 4130 chromoly and use 1-ton tie-rod ends.

6. There aren't many factory components left under the rear of Nick's Jeep. The stock exhaust system was relocated to make room for an Evo Manufacturing EVOLever cantilever suspension. Laying the King coilovers and bypass shocks flat allows for huge suspension travel without having to punch holes through the tub to fit the shocks.

7. Out back is another Currie RockJock 60 with 35-spline chromoly axleshafts, 5.38 Motive gears for a Dana 70, and an ARB Air Locker. The RockJock reuses the factory JK disc brakes but comes with all of the mounting brackets for an easy, bolt-in installation. Currie offers the RockJock in semi-float or full-float styles. Nick chose the full-floater option due to the weight and intended use of his four-door JK.

8. Big 40-inch Nitto Trail Grapplers are found at each corner of the Jeep under heavily trimmed factory fender flares. The tires are mounted on 17x9-inch ATX Chamber beadlocks with paint-matched beadlock rings. The ATX Chambers use countersunk socket head cap screws on the rings and are a 5x5.5 bolt pattern to match the Currie RockJock axles.





9. Inside the Jeep, Adam's High Rollin' Customs welded in a GenRight six-point cage kit. The cage uses 2-inch DOM tubing and has crossover bars above the dash and behind the front seats to maximize strength while still fitting under the factory hardtop. The PRP Daily Driver seats have high-enough side bolsters to hold Nick and his passengers in place without making it overly difficult to enter and exit the Jeep.

10. Nick added a subwoofer box and two wakeboard speakers to the back of his Jeep. The four-door JK offers enough space for the whole family and all their gear without having to sacrifice these creature comforts.

11. The Evo Manufacturing tire carrier uses 1.75-inch, 0.120-wall DOM tubing and Currie Johnny Joints to tie into the rear corner armor. It holds the fullsize 40-inch spare tire without any rattles by mounting to the tub in four locations. Hitch pins make it easy to open the tire carrier and access the rear of the Jeep.

12. When you take a Jeep with a 116-inch wheel-base rockcrawling you cannot be too cautious. Like wearing suspenders with a belt, the sides of the Jeep are flanked by ¼-inch aluminum Evo Manufacturing skins along with 1.75-inch, 0.120-wall DOM rock sliders. **FW**



AT A GLANCE

GENERAL

Vehicle: '13 Jeep Wrangler JK
Owner: Nick Nelson

DRIVETRAIN

Engine: 3.6L V6
Transmission: W5A580 five-spd automatic
Transfer case: NP241 Rocktrac
Front axle/Differential: Currie RockJock Dana 60 w/ 35-spline chromoly axleshafts, 5.38 Motive gears, ARB Air Locker, and Warn Premium hubs
Rear axle/Differential: Currie RockJock Dana 60 w/ full-float hubs, 35-spline chromoly axleshafts, 5.38 Motive gears, and ARB Air Locker

SUSPENSION

Front/Rear suspension: Evo Manufacturing Double Throwdown front suspension and EvoLever rear suspension with King coilover shocks and three-tube bypass shocks
Steering: PSC steering box, pump, reservoir, and hydraulic assist ram, Currie tie rod and drag link

TIRES & WHEELS

Tires: 40x13.50R17 Nitto Trail Grapplers
Wheels: 17x9 ATX Chamber beadlocks

MISCELLANEOUS

Armor: Evo Manufacturing Quarter Pounder front bumper, trimmed fender flares, door skins and rock sliders, rear corner armor and tire carrier
Cool Stuff: PIAA 510 lights, TruckLite LED headlights, Smittybilt XRC8 Comp winch, Banks RamAir intake, Dynomax exhaust, GenRight full cage kit, PRP Daily Driver seats, Drake hood hinges

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BACKWARD GLANCES

1963 Scout 80 Cab-Top

📍 Still willing to serve and the old uniform fits. The original red was painted over by the Sumner VFD when they got the Scout in the mid-'70s. The Civil Defense decals are the type used in the '70s.



IF YOU DIDN'T LIVE THE COLD WAR, YOU probably have seen the campy old movies depicting everything from do-it-yourself bomb shelters to teaching kids to duck and cover under their school desks during a nuclear blast. It may seem a bit silly now, but people took that stuff pretty seriously back then and the U.S. Government had civil defense assets all over the USA, ready for use in the event of nuclear war.

The heart of Civil Defense took place at the local level where village, city, county, and state governments maintained a certain level of preparedness. When the Cold War ended, or maybe warmed up a little, many of the assets allocated to Civil Defense took on another role: disaster preparedness. Most of the gear associated with all that trickled down from the U.S. Government, including one '63 International Scout Cab-Top that ended up with the Sumner Volunteer Fire Department in Tallahatchie County, Mississippi, for about 40 years.

This '63 Scout 80 was built in June of 1963 for the U.S. Government and was assigned to Fort McPherson in Georgia. It was ordered in Red with a rotating red light on top, so was likely used in some capacity by the post



📍 The Scout Cab-Top was designed as a light pickup with about an 800-pound load capacity in the 5-foot bed. This Scout was ordered with an external spare tire mount that attached to the tailgate, though it is no longer installed. The rack and lights were built and installed by the Sumner VFD boys. The rear bumper is not original, the OE piece being an optional two-piece diamond-plate affair.

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*A Closer Look at BDS's 4-Link Coilover Conversion
for F250/F350 Trucks*



1

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2

Installed, the 6" 4-link coilover system corrects steering, driveline, and suspension geometry. The coilover conversion uses a pair gusseted .250" coilover brackets in place that replace the factory coil buckets and has provisions for an auxiliary shock (up to FOX 3.0) for additional dampening. Norcal Motor Company performed this install opting to upgrade the auxiliary FOX 2.0 IFP shocks to FOX 2.5 remotes. They also installed the BDS dual FOX steering stabilizer kit.



3

BDS offers the 4-link conversion in 4", 6" & 8" heights. Key benefits to ditching the stock radius arms include increased strength, stability and caster control. The conversion includes .250" replacement steel brackets and 2" OD x .250-wall DOM control arms with large greasable bushings.

BDS Suspension has been in the suspension game for 2 decades, designing, engineering, and manufacturing quality American made suspension lifts out of their Coldwater, MI facilities. In recent years they've teamed up with FOX to offer several shock and coilover options for 1/2-ton and 3/4-ton Ford, GM, RAM, Toyota, and Jeep applications. One of the latest kits to hit the market is this Ford F250/F350 - 6" 4-link coilover conversion available with FOX 2.5 remote coilovers. The coilovers are available with or without the optional DSC (dual speed compression) adjuster.

The kits are designed to perform well on road or blazing a trail offroad with precision tuned FOX coilovers, 4-link control arm conversion, a premium rear leaf pack and all the steering/driveline modifications needed to keep you driving straight down the road. We had a chance to watch the BDS team beat the prototype version of this kit up out on the Golden Spike trail in Moab earlier this year for the Fullsize Invasion and have to say we were impressed with how their diesel powered F250 performed out on the rocks while still pulling double duty as the company's tow rig. The BDS team isn't afraid to use it and abuse it. All BDS lift kits are backed by the No Fine Print Warranty.

Sources:

BDS Suspension
(517) 279-2135
bds-suspension.com



fire department. The Line Setting Ticket has some unusual additions with special part numbers we are unfamiliar with but also some of the typically seen government options, including magnetic drain plugs and 7.00-15 non-directional tires. The final checks were completed on July 8, 1963, and it was shipped forthwith.

It was a good year to buy a Scout. Big changes had come for the '63 models. Among the most popular were optional roll-up windows replacing the sliders. The other big change was the removable bulkhead (called the "Walk-Thru" option) that allowed International Harvester (or the owner) to easily configure a Scout as a station wagon with bucket seats and a usable rear seat, a fully open roadster with buckets, or a pickup. The roof was raised 1½ inches on both the Cab-Top and Travel-Top, and the windows were

enlarged. The '63s got larger brakes, and they were self-energizing to reduce pedal effort. International made its first efforts at body-rust prevention for the '63s and drastically improved body sealing.

The bones of this '63 are a pretty standard Cab-Top (pickup) Scout 80. It has the 4-152 four-cylinder engine but with the "big" 52-amp alternator and battery. It has the T-90 Warner Gear three-speed, Spicer 18 transfer case, and front and rear Dana 27 axles. The heavy-duty Dana 44 axle was not ordered; instead, the rear Dana 27A has a Powr-Lok limited-slip. The Ramsey PTO winch was installed at the factory, along with the front brush guard and tow hooks.

We know nothing about it's time at Fort McPherson, but it went from there to the Forestry Service and possibly had a short stay with the National Guard. By the early

'70s, it was offered up as intergovernmental surplus, and the Sumner, Mississippi, volunteer fire department (VFD) bought it for use as a rescue rig and to fulfill their requirement for civil defense. More than once, it rolled on Tornado emergencies, storms and so on, but gradually it got parked farther and farther back in the garage, used less and less and finally not at all. Five years ago, the department decided to sell it, and Phil Kerkhoff bought it, got it running, and added it to his collection of IH products. The '63 Scout is showing a bit over 42,000 miles, most of those coming before the Sumner VFD got it. It remains as used by the fire department as a testament to civil defense and public service. Duck and cover! **FW**



☞ The 152ci IH slant-four is the engine that made the Scout. It was essentially half a medium-duty 304ci V-8. It could be made on the same tooling as the V-8 and used many of the same parts. It cranked out a respectable 93 hp, which beat its main competitor, the Jeep CJ, all to heck. The 4-152 was replaced after 1968 by the 4-196, which was half a 392ci V-8 and made 111 hp. A 111hp turbocharged version of the 152 was offered in '65-'67 Scouts, but it was problematic to say the least and bordered on a disaster for IH.



☞ The front Ramsey Model 200 PTO winch was factory installed, as was the brush guard, tow hooks and the chain on the end of the winch cable. Yeah, that cable could use a little attention, and it may even be the original. The Model 200 was rated at 8,000 pounds and carried 150 feet of 5/16-inch wire rope. The PTO was Ramsey's PT1-S, which had outputs facing front and rear. The winch, bumper, PTO, and hardware cost about \$375 and was installed at the factory. The front hooks were about \$5. The brush guard was normally a \$68 dealer installation, but because this was a government contract rig, it was installed at the Fort Wayne TSPC (Truck Sales Processing Center).



☞ The interior is much as it was stock, and as the Sumner VFD left it less the radio gear. The bench seat was standard but buckets were optional. The heater and defroster were improved for the '63 models and seat belts were available. The PTO is operated by the red knob by the driver's right knee.

AT A GLANCE

Vehicle: '63 International Scout 80 Cab-Top
 Owner: Phil Kerkhoff
 Estimated value: \$10,000
 Engine: 152ci 4-cylinder
 Power (hp): 93 @ 4,400
 Torque (lb-ft): 143 @ 2,400 rpm
 Bore & stroke (in): 3.88 x 3.22
 Comp. ratio: 8.19:1
 Transmission: 3-spd, Warner T-90 (IH T-14)
 Transfer case: 2-spd, Spicer 18 (IH TC-144)
 Front axle: Dana 27AF (IH FA-14)
 Rear axle: Dana 27A (IH RA-14), semifloat w/ Powr-Lok
 Axle ratio: 4.27:1
 Tires: 7.00-15
 Wheelbase (in): 100
 GVW (lbs): 3,900
 Curb weight (lbs): 3,200
 Fuel capacity (gal): 11
 Min. grd. clearance (in): 9.75
 Approach angle (deg): 47
 Departure angle (deg): 35

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ACCESSORIES





John Mears' incredible 1974 Bronco

By Ken Brubaker ken.brubaker@fourwheeler.com Photography: Ken Brubaker

THE CREATIVITY OF THE WHEELING WORLD KNOWS NO BOUNDS, AND JOHN MEARS' INCREDIBLE '74 FORD Bronco trail machine is a prime example. "It was found in a field by my nephew in southern Idaho. Paid \$500 for it and brought it home," John says of the Bronco. The rig was mostly stock, had no engine, and each body panel was dented in varying degrees, but it was the perfect foundation on which to build this very unique rig.

THE LONG &



Mears' Bronco has outstanding approach and departure angles, which enable it to ascend and descend obstacles with ease. Twenty inches of length was added to the factory frame, and new frame members were added in front of the engine and at the T-case. The tube chassis from the cab rearward is all custom, constructed by Hazzard Fabworx. The front winch mount holds a Warn Zeon 10-S, and John says the mount is integrated into the rollcage and interior supports. To illuminate the trail at night, there's a 40-inch LED lightbar and four Lost River Offroad-sourced magnetic rock lights. The Bronco rolls on 40x13.50R17LT Toyo M/T tires that are securely mounted to 10-inch-wide Raceline AL Monster beadlock wheels. The nose of the Bronco has been narrowed 13 inches, Wild Horses fiberglass door inserts were added, and the body (which sits on a 2-inch Wild Horses lift) was sprayed '14 Ford Raptor Terrain color.

SHORT OF IT

"It was designed to be an all-purpose vehicle that I would be comfortable in for long trips," John says. He also says that the design utilized as much of the original Bronco as possible, and it remains street legal in his home state. "Throughout it was built to handle all terrains and conditions well but none perfectly. Balance was the key," John notes.

The buildup combined a slew of custom fabrication and factory Bronco parts to cre-

ate a one-of-a-kind machine that includes a longer wheelbase and a unique shortened body. "We named her Machu Picchu after visiting the ancient ruins in Peru. Generally speaking, Machu Picchu means 'old mountain,'" John says. The Bronco build was completed just in time for John to take the rig to King of the Hammers 2015 in Johnson Valley, California, but unfortunately, the engine grenaded shortly after hitting the desert

trails. "After a quick motor swap, we brought it to Moab," John says, referring to the 2015 Moab Easter Jeep Safari, which is where we found John and his rig.

Now that the rig is "done," John says, "Plans are to run as many trails as possible, including more time in Moab, The Hammers, the Rubicon Trail, and wherever time allows." Sounds like a good plan to us.



1

➔ **"IT WAS FOUND IN A FIELD BY MY NEPHEW IN SOUTHERN IDAHO. PAID \$500 FOR IT AND BROUGHT IT HOME."**

—JOHN MEARS



3



2

1. A full-width Spicer prototype Ultimate Dana 60 axle sits under the front of the rig and is fit with 4.10 gears, an Eaton ELocker, Nitro Gear & Axle diff cover, and disc brakes with ¾-ton truck-application calipers. A PSC steering box and hydraulic ram help John point the big 40-inch Toyo tires and the rig has custom high-steer. Both the drag link and tie rod are made from 1.5-inch, 0.250-wall material, and they're fit with RuffStuff spherical rod ends.

2. The rear suspension (shown) is a Hazzard Fabworks-made custom four-link setup and the front is a custom three-link. All of the link bars are made from 2-inch, 0.250-wall material and most are fit with Barnes 4wd spherical rod ends. The lower rear link bars have been miter cut and gusseted to increase ground clearance. Both front and rear suspensions utilize custom-tuned remote-reservoir 2-inch King coilovers, hydraulic bumpstops, and Mac's Custom Tie-Downs custom-made limiting straps. The rear also includes a Currie Antirock sway bar.

3. Custom driveshafts with 1350 U-joints sprout from an Offroad Design Magnum Box. This setup helps give the Bronco a maximum 53.8:1 crawl ratio.

4. Out back is a disc brake-equipped prototype Spicer Ultimate Dana 60 axle fit with an Eaton ELocker, 4.10 gears, and a Nitro Gear & Axle diff cover.



4



5

5. John monitors his rig via a Dakota Digital gauge cluster and Auto Meter gauges. Other interior items include an ididit tilt steering column, Grant steering wheel, Rugged Radios VHF race radio, Lowrance GPS, Art Carr shifter, custom console, and rollcage.



6

6. Switches and fuses for electrical items are conveniently mounted in the dash within easy reach of the driver. Note that there's no signage designating what each switch does. This is the keyless rigs security system. The system was designed so switches must be pressed in sequence to activate the ignition and fueling systems for the vehicle to start.

7. The Bronco is still Ford powered, and the 'plant is a 302ci V-8 that has been bored 0.030-inch over and fit with a mild cam, Edelbrock Performer intake, FAST TBI, Pertronix ignition, Wild Horses shorty headers, and dual exhaust with Flowmaster mufflers. A GM one-wire alternator, one Optima YellowTop, and one Optima RedTop battery provides electrical current. A rear-mounted Griffin aluminum radiator with Flex-a-Lite 17-inch electric fan helps to keep the engine cool. Power is routed through a modified C6 transmission.

8. One of the many unique mods to the Bronco is the shortened cab that is capped at the rear by aftermarket Bronco taillight panels with the tailgate welded in to increase rigidity. Spokane WaterKnife helped with the body mods.

9. The custom tail end of the Bronco is designed to securely mount a number of items, including a spare tire, Power Tank, engine radiator, batteries, air compressor, Hi-Lift Jack, Mac's Custom Tie-Downs D-Vise, and a trio of Swag Ammo Can Mounts. There's also a 23-gallon Wild Horses fuel cell that has been reversed to allow for rear axle travel. **FW**



7



8



9

AT A GLANCE

GENERAL

Vehicle: '74 Ford Bronco
Owner: John Mears
Stomping grounds: Spokane, Washington
Build time: 18 months

DRIVETRAIN

Engine: Ford 302ci V-8
Transmission: C6
Transfer case(s): Offroad Design Magnum Box
Low range ratio(s): 2.00:1, 2.72:1, 5.33:1
Crawl ratio(s): 20.2:1, 27.4:1, 53.8:1
Front axle/differential: Spicer Ultimate Dana 60 prototype, disc brakes, 4.10 gears/Eaton ELocker
Rear axle/differential: Spicer Ultimate Dana 60 prototype, disc brakes, 4.10 gears/Eaton ELocker

SUSPENSION

Front: Hazzard Fabworx three-link, King 2-inch remote-reservoir coilovers, hydraulic bumpstops, Mac's Custom Tie-Downs custom limit straps
Rear: Hazzard Fabworx three-link, King 2-inch remote-reservoir coilovers, hydraulic bumpstops, Mac's Custom Tie-Downs custom limit straps, Currie Antirock sway bar
Steering: PSC hydro-assist

TIRES/WHEELS

Tires: 40x13.50R17LT Toyo Mud Terrain
Wheels: 17x10 Raceline beadlock

MISCELLANEOUS

Lighting: 40-in LED lightbar, Lost River Offroad-sourced magnetic rock lights
Armor: Hazzard Fabworx rollcage including rock rails
Cool stuff: Extended wheelbase, shortened body, custom rear cage, onboard air, Power Tank, Swag toolboxes

Datsun/Nissan pickup spotter's guide

By Jay Kopycinski editor@fourwheeler.com Photography: Jay Kopycinski and Nissan

THE DATSUN 4WD ARRIVED ON U.S. SHORES JUST A BIT BEHIND THE 4WD Toyota mini truck, and both would find eager customers waiting for the small pickups with a transfer case. It was a time when mini trucks were taking off in popularity. The medium-length

wheelbase, narrow body, and cargo bed would make these pickups popular for camping and back-country exploration. We look at the specs and history of the Datsun/Nissan pickups and some of the more popular builder models.

NISSAN NOTES



720 Model Pickup (1980-1986)

The Datsun 4WD truck was introduced to the U.S. for the '80 model year as the 720. In those years, the body badges prominently said DATSUN with "by Nissan" in smaller print. Later the names would flip so the Nissan name was more highlighted, and then the Datsun moniker would disappear from the trucks altogether in the '85 vehicles.

The pickups were available in shortbed, longbed, and King Cab models. Originally the trucks used single-wall, railed beds up until the '83s, later giving way to double-wall beds with smooth exterior panels. Shortbeds were

🔗 The Datsun 620 pickup model preceded the 720 model. It was a popular 2WD truck in its day. One way to get a Datsun 4WD truck before the factory '80 4x4 hit the market was with a Low Manufacturing conversion kit. It was a bolt-on kit to convert a 2WD to 4WD using a Dana 300 transfer case and Dana 30 open-knuckle front axle mounted to leaf springs.

73.4 inches long and longbeds were 88.8 inches long. These would yield a truck wheelbase of 101.4 and 110.8 inches, respectively.

While Toyota chose to introduce its 4WD mini truck with a live front axle, the Datsuns were equipped with independent front suspension (IFS) with torsion bars attached to



🔗 Datsun introduced the 720 Model 4WD pickup as an '80 model, about a year after Toyota offered its 4WD mini truck. Datsun chose to offer the truck with IFS right from the start, and the extended cab, termed King Cab, was something new for the small pickups.

the lower A-arms. The early trucks (up until '83 models) strengthened the IFS with the use of tension rods connecting the A-arms to the front crossmember, while later trucks

used rods behind the A-arms that connected to the frame. The rear axle sat under traditional leaf spring packs.

The original engine in the '80 720 was the 97hp, 2.0L L20B engine carried over from the previous 620-series pickups. Then for the '81s, the Z-series carbureted engines were introduced. The NAPS-Z single overhead-cam engine utilized two spark plugs per cylinder. Engines for the '81-'83 trucks (Z22) had a displacement of 2.2 liters, and the '83-'86 models (Z24) were bumped up to 2.4 liters with 98 hp and 103 hp, respectively. The later engines used a computer-controlled carburetor combined with an oxygen sensor to further help reduce emissions. The late '86s got the 106hp Z24i fuel-injected engine.

Four- and five-speed (0.81:1 overdrive) manual transmissions used in the early years were mated to a divorced transfer case with a centered front driveline output using a 2.27:1 low-range ratio. The H190 (190 mm) rear axle without a removable rear cover was used up until about June 1983. Trucks manufactured after this date used a slightly beefier C200

(200 mm) axle. All front axles used an R180 (180 mm) differential, and the left and right halfshafts were not the same length. Axle gearing was typically 4.11:1 or 4.38:1, and there were both manual and automatic locking hubs available.

Hardbody Pickup (1986.5-1997)

The D21 Hardbody was introduced in 1986 as an '86.5 model with a double-walled bed construction and an updated look. There were standard and King Cab models, with a 6-foot bed or longer 7-foot bed. Wheelbase was 104.3 or 116.1 inches.

The Z24i throttle-body injected engine continued in use until the '89 trucks when it was replaced by the three-valves-per-cylinder 134hp KA24E with multi-point fuel injection, which would run through the end of the Hardbody line for '97. There was also the VG30 3.0L V-6 engine. A 140hp TBI version (VG30i) was used in the '86.5-'89s, and the 154hp MPI VG30E was used in the '90-'95s

as an option over the base four-cylinder. The '96-'97 models were available only with the four-cylinder engine, as the V-6 was dropped from the pickup line.

Transmissions were either a Jatco L3N71B three-speed, a Jatco RE4R01A four-speed automatic ('90-on), or five-speed manual (FS5W71G for the four-cylinder with 0.821:1 overdrive ratio and FS5R30A behind the V-6 engines with 0.81:1 overdrive ratio). Transfer case was the married aluminum-case, chain-drive Fuji Univance TX-10A part-time unit with 2.02:1 low-range ratio and a slip-yoke output.

In general, the C200 rear axle was used on the four-cylinder Hardbody trucks, and the 31-spline H233B (233 mm) rear axle was used on the V-6 trucks. The '96-'97 four-cylinder 4WD trucks also got the H233B that uses a drop-out third member. A rear limited-slip differential was provided on the SE model 4WD trucks. The front axle was the R180 (180 mm) or R200 (200 mm). Left and right front axle halfshafts were equal length and interchangeable, though the axle-flange bolt



☛ The Hardbody trucks were offered as a mid-'86 model and offered a new, bolder body style with cleaner outside body trim. A '60 2WD Datsun pickup sits in the background here.



☛ The Hardbody pickups gained significant popularity for off-road use and started to drive after-market improvement solutions. Rear wheel ABS was phased in around the '90 models. The gear ratio on Nissan trucks is found on the door jamb tag as the last two digits of the axle code.



☛ For those that want a beefier, more reliable front drivetrain for four-wheeling, a solid-axle swap is often the solution. Dana 44 axles that are driver-side drop are a popular swap choice and match well to the location of the stock front driveshaft. The factory steering boxes are often retained as they're stout units and work well for live axle linkage.



☛ The factory TX-10A transfer cases are considered robust. However, for those running bigger tires and wanting crawl capability, lower gearing helps. Calmini offers low-range replacement gear sets to drop the low range from 2.02:1 to 3.92:1 for the '86-'04 Nissan trucks.



☛ The Frontier trucks introduced for '98 offered larger engines. The 143hp KA24DE 2.4L I-4 continued on through '00 and was coupled to a five-speed manual or to the rare four-speed automatic transmission.

pattern changed around the '90 trucks. Axle ratios were typically 4.375:1 or 4.625:1.

Frontier Pickup (1998-2004)

There were several body styles of the D22 Frontier. The early '98-'00 models were a softened style of the previous Hardbody sheetmetal, and the later '01-'04 trucks were restyled with changes to the hood, fenders, tailgate, headlights, and front bumper. A regular cab model was offered for '98-'99 with a wheelbase of 104.3 inches and bed length of 77.4 inches with the KA24DE four-cylinder engine only. The King Cab version spanned all years with a wheelbase of 116.1 inches and bed length of 74.6 inches. A crew cab shortbed was introduced for '00 and had the same wheelbase as the King Cab, while

a longbed version became available in the '02-'04s. Frames were fully boxed from the front framehorns all the way to behind the rear axles.

Nissan continued to offer both I-4 (through the '00) and V-6 engines in the Frontier. Available five-speed manual transmissions were the Nissan FS5W71C (0.82:1 overdrive ratio) mated to the KA24DE and the Aichi FS5R30A (0.81:1 overdrive ratio) mated to the V-6 engines. There was also the Jatco RE-4R01A four-speed automatic (0.69:1 overdrive ratio) offered with some of the V-6 models.

The transfer case used was the same TX-10A part-time unit used since the '86.5 Hardbody. While all engines used the same transfer case, the input shaft spline count on the four-cylinder trucks was 22, and for the V-6 trucks it was 30.

Four-cylinder Frontiers came with the

C200 rear & R180 front axle combo with 4.63:1 gearing. The V-6 trucks typically had the H233B/R200 combination with 4.636 or 4.90 gears; however, some '03-'04 V-6 trucks came with the older-style 29-spline C200 with 4.625 gears or the upgraded 31-spline C200 with 4.55 gearing.

Frontier D40 (2005-present)

Nissan introduced the latest Frontier pickup for '05 when the model grew in overall size from the previous generations. Wheelbase also grew to just under 126 inches. It's been offered with both a four-cylinder engine and 4.0L V-6 with six-speed manual and five-speed automatic transmissions. Traction and stability controls were added and improved upon over the years.



For '99, the 170hp VG33E 3.3L V-6 was added to the lineup, and starting with the '01s, this was also a supercharged version that offered 210 hp. All engines at this point were equipped with multi-point fuel injection. The '03-'04 normally aspirated VG33E engines saw a bump to 180 hp.

There were several axle combinations used on the Frontier models. The beefier H233B in the previous D21 line was 59½ inches wide. For the D22 line, it was widened to 62½ inches in the '99s, plus upgraded to 33 splines on the '00-up models.



Warn Industries manufactured the locking hubs for the Frontier front axles with a mix of manual (through '00 models) and auto locking hubs on the trucks.



The D40 Frontier models were introduced for '05, growing more towards a mid-size pickup. Front suspension consists of coil-spring IFS, while rear leaf packs continue to support the rear of the truck.



Interiors were updated with each new model introduction, growing plusher and roomier as time progressed. The '94s also saw an interior refresh in the Hardbody line, and D22 interiors got a mid-model refresh for the '02-'04 models. This is a D40 double-cab interior. **FW**

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TRAILER TIRE'D

Maxxis trailer tires for the long haul

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

NOBODY THINKS ABOUT trailer tires until it's time to actually use your trailer. And naturally, when it's time to use your trailer, there's usually no wiggle room in the schedule for unforeseen problems. But because trailers just sit around between uses, these inopportune moments are usually the time your trailer tires choose to let you know you've neglected them for one trip too long.

Diligent preflight tire pressure and wheel bearing checks will help prevent on-road tire blowouts, but improper long-term storage,

sun damage, dry rot, improper inflation, insufficient load-carrying capability, bad bearings, and damage from physical contact are all regular players in early tire demise. For us, neglectful storage and old age finally caught up with our 7,000-pound flatbed, and the last time we pulled it out to get a project to a show at short notice, we discovered one of our tires had finally died and the other three were about to follow. Our trailer tires were just flat-out tired. So what's a hauler to do?

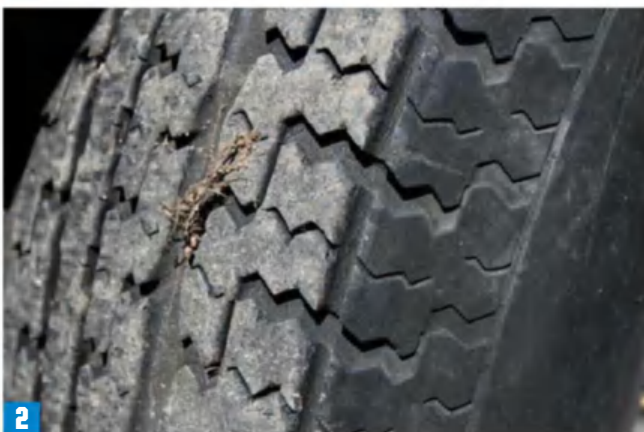
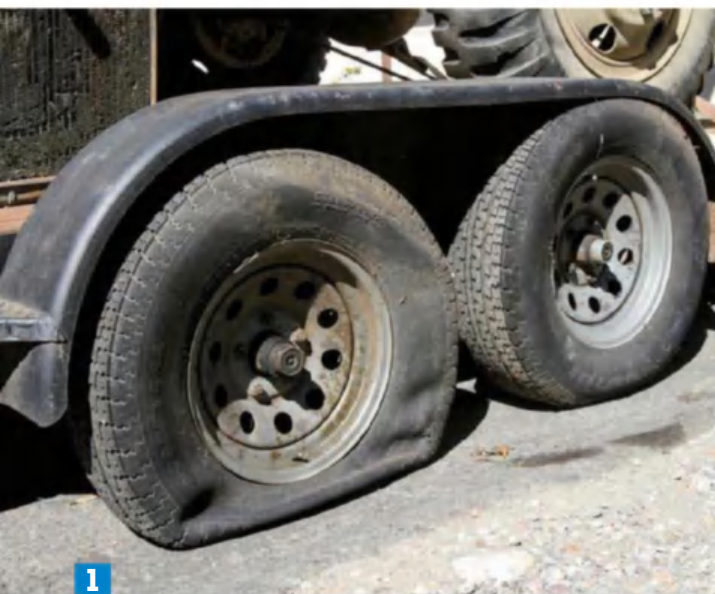
We searched for some rugged, strong, long-lasting replacements

and found everything we were looking for in the Maxxis ST Radial M8008. The radial construction will roll truer and with better carcass stability than a squirmy bias-ply tire, and the specially designed rubber compound and tread design actually reduces rolling resistance for increased mileage and towing performance. Furthermore, Maxxis offers the ST Radial not only in a wide variety of sizes for 13- to 16-inch wheels, but it offers several higher load-range capacities for each.

Our old tires were a D load range that offered 2,540-pound load-

carrying capacity at 65 psi. And although Maxxis offers a 225/75R15 with those same specs, it also had an E load range that supports 2,830 pounds at 80 psi and features a burly 10-ply construction. Sold! We ordered up a quartet of these and brought our trailer down to our local Discount Tire to have the new rubber professionally installed. Now our trailer is a lot safer because the tires are actually under-stressed for our loaded trailer weights and will handle with more stability. Follow along as we show you some tips on how to get the most life out of your new trailer tires.





1. After a long, hard life, this is the sight that greeted us the last time we pulled our trusty trailer out for a project rig delivery. After nearly 10 years of neglectful use, our old radials had thrown in the towel. Although trailer tires have more UV inhibitors than automotive tires to help combat dry-rotting and sun damage, they will eventually fail with nothing more than time.

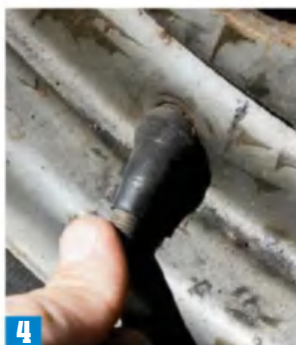
2. Always check your trailer wheel bearings, tire pressure, and overall tire condition before hitting the road. In this case, even though our old trailer tires had plenty of tread life left, old age and UV exposure had led to severe weather checking between the tread and sidewall that could result in carcass delamination.

3. Sun is a tire's worst enemy, as the UV rays will actually begin decomposing the rubber. Because they sit outside for long periods of time, most trailer tires have extra UV inhibitors added to the rubber compound. Even still, note the sandpaper-like texture of our old tires' sidewalls that indicates the rubber was starting to finally break down and become unstable.

4. Trailer tires will almost always outlast the cheap rubber valve stems most tire shops use. Void of the extra UV-inhibiting material found in the trailer tires, we suffered multiple rotted-out valve stems on this set of tires during their 10-year lifespan on this trailer. As part of your preflight check, give the valve stem a quick flip with your finger and listen for the hiss of escaping air. This one was thoroughly bad.

5. If your tire springs a flat because of a puncture, bad valve stem, or other reason, fix it quickly rather than letting your trailer sit on the flat tire for extended periods of time. Otherwise, cracks in the sidewalls may develop that may not be evident from a quick inspection. This is a blowout waiting to happen.

6. It's easier said than done, but if you have to store your trailer for long periods of time, it's best not to leave it loaded. Ideally, we would've dragged the CJ-6 project that's been fouling the deck of our trailer for nearly two years into a parking spot somewhere on our property, but instead we left it loaded...so we could



fit even more non-running projects at our house! Still, the additional weight lends strain to the tires, so if you must store your trailer loaded, periodically check to ensure your tires are at max pressure. Even better, move the trailer every now and then so the tires aren't sitting on the same tread patches.

7. If you do upsize your trailer tires to gain ground clearance or a higher

load-carrying capacity, make sure you have enough tire-to-fender clearance. Just like on your 4x4, flex the suspension its full range of movement and make sure there's no metal-to-rubber interference. Keep in mind that the tires and wheels may camber in or out a bit when making tight turns, so as a general rule of thumb, you want to see at least a finger-width of clearance between the fender and tire to account for any lateral play.



8



9

8. Other than a little additional price, there's no really good reason not to step into the highest load-capacity tires that will fit your trailer. Maxxis offers its M8008 in several sizes and load ranges, but we were stoked to find PN TL15713000, which is an 80 psi Load Range E 225/75R15 that can support 2,830 pounds per tire and has a burly 10-ply construction.

9. The Maxxis M8008 features a special compound that resists squirming, decreases rolling resistance, and increases stability. Likewise, the tread features a low-resistance design on a stable, very round radial carcass.

10. Discount Tire installed these high-pressure valve stems that can better cope with the higher loads and max pressure of 80 psi these tires will routinely see.

11. Wheel weights on a trailer tire? Yeah. Balancing your tires, whether on a vehicle or your trailer, helps ensure they roll true and round. An out-of-balance tire will cause uneven tread wear, early suspension component wear, decreased stability, and increase vibration. In short, it's cheap insurance to have your trailer tires balanced. The additional life you'll get out of the tread can more than make up for the minor cash outlay.

12. Each load and trailer combo will be different, but running your tire pressure too low will cause the outer tread blocks to wear prematurely and will make the tires run hotter, risking blowout. Running too much pressure will cause the tread to crown, prema-

turely wearing out the center tread. Based on the weight and position on the deck, every load will require a different pressure to get the perfect balance, but we always start off at maximum pressure and then dial it back based on the contact patch of the tire.

13. Keep in mind most tire pressure gauges for regular automotive use may not go high enough to accurately read the pressure of most load range E tires. Any gauge is better than no gauge, so check your auto parts store for a high-pressure tire gauge if you don't have one. We've used just about every gauge out there and have found the 0-255 psi Power Digital Tire Inflator (PN TIG-8340) to be one of the most reliable and accurate options. It's what we always carry and use in the garage.

14. Log on to etrailer.com or just visit your local RV store for a set of dedicated trailer tire covers to keep the sun off your new purchase. In lieu of that an old drop cloth, barbecue grill cover, or even a sheet of plywood is better than just letting your tires sit in the sun, literally getting the life baked out of them. **FW**

SOURCES

Discount Tire
866/895-8031, discounttire.com

Maxxis
maxxis.com

Power Tank
209/366-2163, powertank.com



10



11



12



13



14

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Change the vibe of your 4x4 from the bottom up

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

EXTREME MAKEUNDER

OK, A “MAKEUNDER” SOUNDS like we’re diminishing the looks of our truck. But we’re pretty sure that phrase with the word “makeover” is copyrighted. Actually, what we mean is, clothes may make the man, but wheels and tires definitely make the truck. If you really wanna change the entire vibe of your 4x4, start under the fenders with a new set of wheels and tires. Nothing shy of extreme bodywork and a fresh paint job will do as much to transform your rig’s mojo.

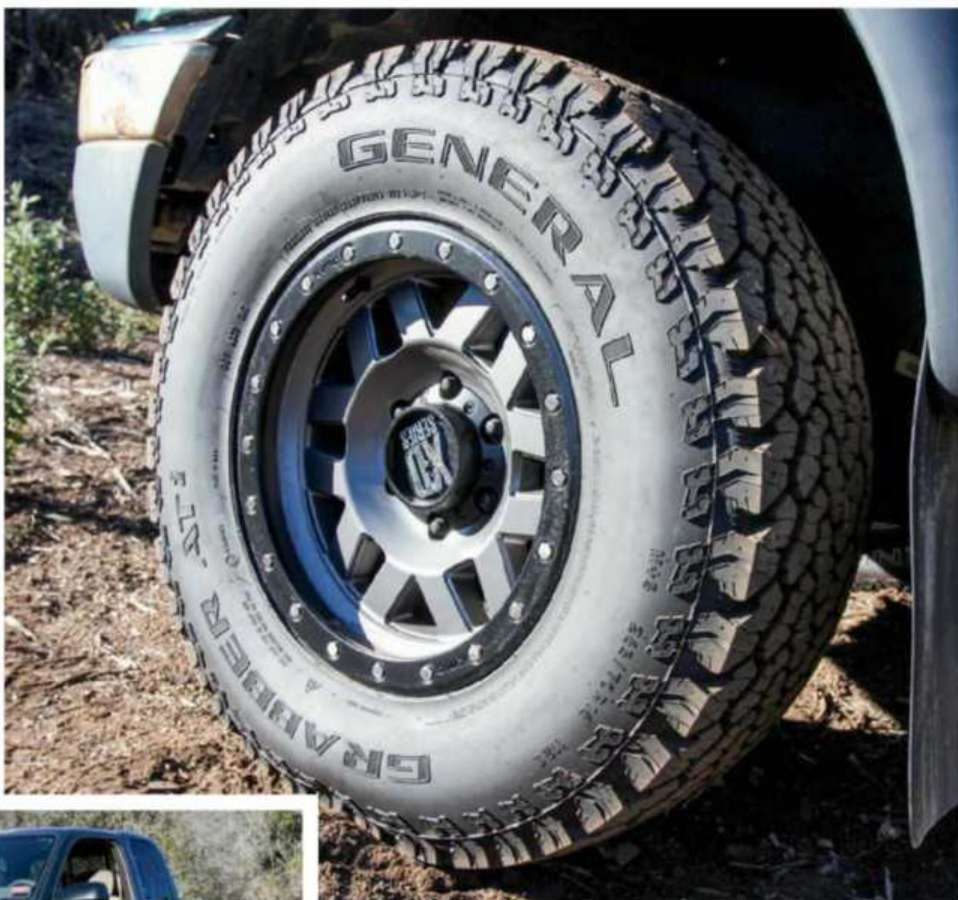
➤ We’ve always loved the General Grabber AT2. Its mild street manners are in total contrast with its capable off-road performance. Ours is a 265/75R16LT size mounted on a set of KMC Wheels’ new XD-Series Machete in matte gray with black reinforcing rings and stainless steel ring bolts in 16x8 size.



Before



After



Don’t believe us? Heck, we had a page to kill in this issue, so we thought we’d show you a quick peek at our ’01 Tacoma project. Check out what a fresh set of General Grabber AT2 tires mounted on a set of the newest offerings from KMC Wheels, the XD-Series XD128 Machete, does for this old truck. **FW**

SOURCES

General Tire
generaltire.com

KMC Wheels
kmcwheels.com



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General Tire's newest 37-inch

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

ATTENTION GRABBERS

YEAH, OK. THE GENERAL Grabber isn't really new. In fact, you've seen Grabbers all over the place for years. But what you probably didn't know is that up until recently (very recently, in fact), any of those Grabbers you saw sized larger than 35-inch-diameter weren't DOT legal. "But I see JKs on 37s and pruners all over the place running 37-inch Grabbers!" you might be thinking. Yeah, but those are leftover race or promotional tires for off-road use



Wishful thinking.



On casual inspection, the DOT-legal 37x12.50R17LT General Grabber looks just like its race-only cousin, but there's more under the carcass than meets the eye.



Advanced sidewall technology keeps all the strength of durability of the race-only tires, but different construction allows the DOT tires to deal with repeated heat and cooling cycles a street-driven tire must endure.

only. We got one of the very first sets of DOT-legal 37x12.50R17s available to the general public and just had to share. The delivery truck dropped them off literally the day before we had to get this issue to the printer, so we didn't even have time to mount them on a vehicle yet, but suffice to say, despite looking virtually identical to the race-only 37-inch Grabbers, the DOT-legal versions have a few key technical features that set them apart from the race-only tires. For starters, the 37x12.50R17LT DOT tire has a narrower tread face than the 37-inch race tire. Also, the DOT tire is much quieter on highway



Tread blocks that differ in size around the circumference of the tire make different pitches as they slap the ground. As these noise waves come off the tire, some of these frequencies actually cancel each other out, resulting in a quieter on-road ride with no penalty in performance. Race tires don't bother with this added construction complexity 'cause honestly, who can hear tires over a 900hp engine?

SPECIFICATIONS (as tested)

Tire: General Grabber
Size: 37x12.50R17LT
Type: Radial
Load range: D
Max load (lb): 3,525
Approved rim width (in): 8.0-11.0
Tread depth (in): %
Tread width (in): 10
Section width (in): 13
Overall diameter (in): 35.9
Maximum psi: 50
Weight (lb): 82

due to varying-sized tread blocks. Computer-optimized tread design varies the size of the lugs in pitch and sequence so the noise frequencies cancel each other out. On the race tire, the tread block sizes are all the same and they just howl away. Also, the DOT tire is a bit lighter in weight and features an improved sidewall design compared with the race tire. But most importantly, the DOT tire can be purchased by anyone at any General Tire retail location. **FWW**

SOURCE

General Tire
generaltire.com

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Consult your Rigid Industries' installation manual, the Rigid Industries' website and any local, state and federal laws, rules and regulations to determine whether your particular application/installation is authorized for use on a public highway.



SHUT IT UP

How to plug a tire puncture

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

FOR WHATEVER REASON, SOME people just seem to have all the luck. For us, whenever we throw down good money on a new set of tires, we invariably pick up a screw, nail, or other puncturing debris within the first 500 miles. Normally the tipoff is when one of our friends casually looks down at our tire and asks, "You building a house?"

In our sport of off-roading, tire damage is as inevitable as fuelling up. It's gonna happen sooner or

later. A source of onboard air to fill your tire back up and a tire plug kit are a must-have. For us, we're big fans of the Pro-Series Tire Repair Kit (PN 8134) from Power Tank. It includes all the tools, lube, plugs, stainless wire, and other related things you'll need to get your punctured or gashed sidewall off the trail and back to civilization. But you've got start somewhere, so we dug up some old photos from several years ago to show you how to make a simple puncture fix in your tire tread.

At less than \$40, the Pro-Series Tire Repair Kit from Power Tank (PN 8134) includes everything you need to field-fix your tires in a handy roll-up Velcro bag. You get a heavy-duty reaming and needle tool, lube, 24-inches of stainless wire, a four-way valve core tool, folding razor knife, heavy pliers, a pressure gauge, valve stems, and instructions. We have one with us on every trail outing.



The first step, obviously, is to find the puncture. A nail or screw sticking out of the tread is a no-brainer, but if it's a stick or rock puncture, you may need to use a little water to look for bubbles. Or just shut up your loud friends heckling in the background and listen for the air leak.



2



Once the hole is clear, shove the reamer in and out of the hole a few times. This enlarges the hole to the proper diameter to accept the plug, removes any tattered or fractured tread and cords, and uncovers fresh rubber for the plugs to bite into.

With the reamer work done, switch to the needle. Use the supplied lube on the needle so the plug doesn't stick and then insert a plug through the needle eye. If the hole you're plugging is on the small side or goes through a thick tread block, it may help to put a small amount of lube on the plug itself.

3



4



Make sure the plug is centered in the needle, then push the plug all the way through the tire, leaving a decent amount of the plug ends outside of the hole. Carefully depress the sliding collar on the needle to the tire tread surface as you pull the needle out. The tip of the needle is split and will spread to clear the plug as it's pulled free of the tire. If your needle has a collar, it helps keep the plug from coming out of the tire with the needle. If not, give the needle a slight twist as you remove it to help the plug bunch up on the inside of the tire and release the needle tool.

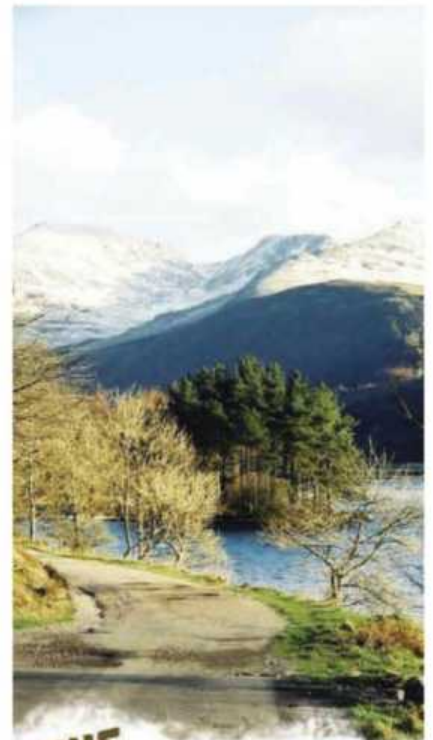
5



Finally, use a razor or sharp knife to cut the plug to the same height as the tire surface. If you're dealing with a sidewall gash, skip the reamer and insert plugs until the void is filled. Don't cut the plug ends flush in a sidewall repair. For exceptionally large gashes that take more than three or four plugs to fill, use wire and tire glue to sew up the rip, then fill the voids with plugs. Plugs are OK for tire tread, but try not to drive on the street with plugged and/or sewn sidewalls. **FW**

SOURCE

PowerTank
209/366-2163, powertank.com



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RETRO RUBBER



Firestone Knobbies from yesteryear today!

By **Christian Hazel** christian.hazel@fourwheeler.com Photography: Christian Hazel

SOMETIMES IT JUST HURTS TO put a modern tire under a vintage rig. Take our '59 CJ-6: Other than a Pertronix electronic ignition conversion inside the factory distributor, it was all factory spec. Why on earth would we bolt a set of radial tires mounted on fancy aluminum wheels to the Dana 25 front and Dana 44 rear? Exactly! We wouldn't!

Coker Tire offers vintage

reproduction rubber for all sorts of antique vehicles going back to the turn of the century (that's the 20th century for all you millennial brats). From wide whitewalls to fat cheater slicks, Coker has the vintage enthusiast covered. And one of its coolest 4x4 offerings in our opinion is the Firestone ANS Knob. Known simply as "knobbies" for short, the "all-non-skid" tread is as dirt simple as you can get, aside from a set of

military NDTs. These tube-type bias-ply tires are proudly made in the USA with all the original markings for those looking for a concourse-perfect resto. For us, we were just looking for absurdly cool.

Although Coker offers its own vintage aluminum and steel wheels and you can order your tires mounted and balanced to your door, it unfortunately doesn't have a 5-on-5.5-bolt-pattern 16-inch wheel with a

center hole large enough to clear the Jeep's hub, so we put in a call to Omix ADA. The company does, in fact, have the correct 16x4.5-inch steel wheels that are exact reproductions of the factory steelies. We sprayed them down with some almond-colored Rustoleum and then mounted our tubes and tires up at our local tire store. The results are pretty stunning, if we do say so ourselves.





1



2

SPECIFICATIONS (as tested)

Tire: Firestone ANS Knob
 Size: 6.50-16
 Type: Bias
 Load range: B
 Max load (lb): 1,580
 Approved rim width (in): 4.5-5.0
 Tread depth (in): ½
 Tread width (in): 5
 Section width (in): 7.5
 Overall diameter (in): 29.40
 Maximum psi: 32
 Weight (lb): 42 (mounted on steel wheel with tube)

1. It's been about 50 years or more since Jeeps came from the factory with 16x4.5-inch wheels. If you can even find a set of vintage skinny steels, the lug nut holes are often cracked, wallowed, and worn. Omix offers these wheels (PN 16725.01) brand new, although most websites list the 16x5.75 measurement taken from the outside of the wheel lip, not the tire bead.

2. Coker carries the factory 6.00-16 size, but we stepped up to the 6.50-16s for our longer CJ-6. The 29.40-inch advertised diameter actually provides a static load radius of 14.25 inches when mounted on the Jeep, and there's plenty of clearance under the fenders.

3. Although we wouldn't take them rockcrawling (at least not on this old Jeep), the knobblies offer up impressive bite off-road. They'll chew and claw at will, but they also dig readily, so you have to be careful with the throttle.

4. We love that the tread wear indicator bars actually have "TWI" stamped in them, but let's be honest: By the time you get down to the indicators, the tire is pretty much a slick.

5. Even with our tires balanced for street use, like most bias-ply tires, the ANS Knob is a little lively for the first several miles of street driving until the carcass comes up to operating temperature and gets round. You don't really test cornering or braking performance with a setup like this, so be prepared to just poke along and savor the sweet vintage hum from the knobs slapping pavement and all the thumbs-ups you'll get from passing motorists. **FW**

SOURCE

Coker Tire
 866/516-3215, coker-tire.com

Omix ADA
 770/614-6101, omix-ada.com



3



4



5

NO REPLACEMENT FOR DISPLACEMENT?

Q Is there a replacement for displacement? If so, what is it?

DAN PULSFORD

VIA FACEBOOK.COM/JOHNCAPPA4X4

A And so goes the old saying, there is no replacement for displacement. It's a time-tested idea of simple engine power being the most reliable. Increase the cubic inches of an engine and you increase the power output. However, engine technology has come a long way since this phrase was first muttered. There are aftermarket engine products specifically designed to fool your engine into thinking it has a larger displacement than it actually does. These include turbos, superchargers, and nitrous oxide. All three systems are designed to introduce more fuel and more air into your engine. This in turn produces more power. Of course, nitrous oxide is generally only used for short bursts, and all three systems add substantially more complexity to a naturally aspirated engine. Even though turbo and supercharger reliability has increased considerably over the last few decades, I'd still be hard pressed to choose boost over cubic inches. Ultimately, it really depends on the application. If you are trying to save weight and money, then a



turbo or supercharger system starts to make more sense than a custom big-inch engine that can cost cubic dollars to assemble.

FLAT BOTTOM LONG-ARM

Q I'm planning on doing a custom long-arm suspension conversion on a Jeep TJ Wrangler with a completely flat belly skid. I want to use JK control arms. I'd like to cut the ends off if needed and reuse the bushings. How do I set up the long arms and what is the best set up for a low center of gravity?

ERIK MULLNER

VIA FACEBOOK.COM/JOHNCAPPA4X4

A Building your own Jeep TJ Wrangler long-arm suspension system using recycled JK Wrangler control arms requires a lot of thought. Essentially, you are combining the components from two vehicles that were never designed to go together. In most cases, a conversion like this is a lot more difficult than starting from scratch. In this case, the JK frame is quite a bit different than the TJ frame, so the mounting locations will certainly be different too. It's not a totally unmanageable problem, but because you plan on using the JK arms, you will have a lot of limitations and may run into mounting issues. Cutting and welding on the JK arms is fine, however if you weld near the ends, which you will most certainly need to do, you will need to remove or replace the rubber bushings. The heat from welding will cause them to burn or melt. Bushing replacement sort of goes against what you are trying to do here, which is save a little money on the control arms of your custom suspension, right? The other issue is that the factory JK control arms are not adjustable. You won't be able to tune in axle location or pinion angle for proper driveshaft alignment, or make steering caster changes without cutting and welding. That means you would have to get all of these settings absolutely perfect prior to welding up the control arms. It's not an impossible task, but it's also not at all easy. Considering all of this, I think you will be a lot less frustrated

if you simply start with some straight DOM tubing and aftermarket adjustable weld-on ends. It may cost a little more money in the beginning but will make for a better suspension conversion in the long run. If you insist on reusing as many JK parts as possible, consider using the stock JK lower arms and then build your own custom adjustable upper arms front and rear. This will provide the pinion angle and caster adjustability you'll more than likely need.

Properly locating the suspension control arms on the axle and chassis for best on- and off-road performance requires basic knowledge of suspension geometry and the forces involved. There are online programs available that can help you position the arms. I recommend reading about suspension geometry and how it affects the vehicle prior to doing any cutting and welding. *Chassis Engineering* by Herb Adams is a great place to start.

To keep the center of gravity of your 4x4 low, you'll need to keep the overall height of the 4x4 low. This typically involves trimming fenders for tire clearance rather than lifting the suspension or body. In more extreme cases, the frame can be modified and notched to make more room for the axles as the suspension fully compresses.

Performing a completely flat skidplate conversion on a TJ requires that you pay special attention to rear driveshaft angles to avoid vibration and binding at full droop. It also requires a significant body lift or floor mods for transmission and transfer case clearance. There are bolt-on high-clearance TJ skidplates available from many different companies; however, they are not completely flat. These bolt-on skidplates don't require the extensive modifications needed to fit a truly flat skidplate on your TJ.

PULL OUT

Q I have a '02 Chevy 4x4 with a 5-inch In-Ferno lift and a 4-inch body lift. How do I keep the front halfshafts from separating from the front differential?

RICK TRACY LITTLEFIELD

VIA FACEBOOK.COM/JOHNCAPPA4X4

A The short and simple answer is that you have too much suspension droop for the suspension and axle design. The lift is allowing



WHERE TO WRITE

Have a 4x4 tech question you want answered in Techline, drop an email to editor@fourwheeler.com or head on over to our forums at fourwheeler.com. All letters become the property of Four Wheeler, and we reserve the right to edit them for length, accuracy, and clarity. Due to the volume of mail, electronic and otherwise, we cannot respond to every reader, but we do read everything.

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the suspension to droop and extend beyond the plunge capability of your halfshafts. A-arms suspensions are commonly found on Ford, GM, Ram, and other ½-ton trucks. Lift companies generally provide lowering brackets to drop the differential and halfshafts about the same distance as the A-arms when lifting a 4x4 with A-arm independent suspension like yours. In your case, I suspect the manufacturer attempted to increase ground clearance by not lowering the differential enough, or the company never really intended the suspension to be used off-road. When you hit a large bump or catch air, the suspension extends and the shafts pull apart. You have a couple of options. You could add limit straps to limit down travel or you could switch to a properly designed lift kit. If properly located, the limit straps will obviously be the least expensive option. When installing them, don't forget that the straps will stretch about 1-inch for every 12-inches of strap length. Look for quality limiting straps with at least four layers. Heavy-duty straps with six layers are also available for more abusive conditions. Ruff Stuff Specialties (ruffstuff-specialties.com) and Synergy Manufacturing (synergymfg.com) among other companies offer quality limiting straps. You may need to weld tabs to the frame and/or lower A-arm to complete the installation.

DANA 30 DILEMMA

Q Can a Jeep Dana 30 front axle be made strong enough to wheel moderately? I'm going with 35-inch tires. Would a truss help?

RUNNIE LONGORIA
VIA FACEBOOK.COM/JOHNCAPPA4X4

A Considering the stock application, a Dana 30 is a fairly robust axle assembly. With an open differential, a Dana 30 will hold up incredibly well in most off-road situations. However, adding excessive weight, more power,



larger tires, a locker, and driving aggressively off-road can bring the Dana 30 to its knees. With a locker and 35-inch tires, you need to be careful about throttle hopping up ledges and climbing undercut rocks. To keep the axleshafts and steering U-joints alive, it's best to attack obstacles with the steering wheel pointed straight ahead if possible. U-joints and axles are weaker when turned.

In most cases the Dana 30 axlehousing will hold up to moderate off-road use. If you plan on hitting high-speed trails, an axle truss will help keep the housing from bending. For low-speed technical off-road use, an axle truss will decrease ground clearance in most cases. It is possible for too much side load leverage to bend the housing, though. Ultimately, if you drive sanely, I think you can make a Dana 30 live with 35-inch tires very easily. That said, the 35s are the maximum diameter tire I would consider putting on a Dana 30 axle, regardless of the aftermarket upgrades you make.

TOY TECH

Q I have a 6-lug Dana 44 rear axle with disc brakes in my Toyota. I was told it came out of a V-6 Isuzu Rodeo or Honda Passport. Can that be right?

Should I run factory or solid motor mounts? I'm currently running stock motor mounts. Someone said I could run one solid mount on the right side and a factory mount on the left side. The truck has a stock 20R with dual transfer cases, a front Detroit Locker, and a welded rear differential.

I want to run the Mayhem Metal Works four-link skid pan. Does the company offer just the skidplate and how much is it?

CHRIS KILKENNY
VIA FACEBOOK.COM/JOHNCAPPA4X4

A The Isuzu Rodeo and Honda Passport both came with a 6-lug Dana 44 rear axle for a few years in the '90s. Many of them have limited-slip differentials, disc brakes, and 4.30:1 gears. These axles are easy to adapt to a Toyota truck and are an upgrade over the stock Toyota rear axle assembly. It's about 60 inches wide and uses common Dana 44 parts. It even has normal 30-spline shafts. However, these axles often come with odd-ball flange yokes. The good news is that a traditional Spicer yoke is a bolt on deal.

You don't want to run solid steel motor mounts on a recreational off-road vehicle. The frame and chassis will flex too much for that. You'll end up either cracking the engine block or busting motor mount bolts. If you are tearing up the stock rubber motor mounts, look into some aftermarket urethane motor mounts from companies like LCE Performance (lceperformance.com).

I'm sure Mayhem Metal Works ([A photograph showing a close-up of a metal fabrication process. A person is working on a metal structure, possibly a skidplate or a frame component. The metal is being welded or brazed, and there is a bright light from the heat source. The background is dark and out of focus.](http://mayhem-</p>
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metalworks.com) will sell just the skidplate. The company specializes in custom fabrication so it's not farfetched. You'll have to call the company directly for pricing and availability.

4x4 CAMERA GEAR QUERY

Q I need a camera tripod. I have been considering a Tiffen carbon fiber tripod. I want one that is light and folds up nicely so it's very portable. I like to hike. I like the ball head and fully adjustable legs with spikes on the feet. What do you use?

MICHAEL WILLIAMS
VIA FACEBOOK.COM/JOHNCAPPA4X4

A Choosing a tripod should be totally based on personal preference and use. There are so many different features and options available it boggles the mind. For years I had been using a pretty busted up tripod that I saved from the garbage can. I didn't use it much. A few years ago I upgraded to a free-to-me tripod that had been left behind. It wasn't anything fancy, but it wasn't falling apart like my garbage-can-salvaged tripod. I used it for a few years until recently. I started using a tripod a lot more often, especially for slow shutter speeds in a dimly lit shop. I had a few criteria that needed to be filled when I started my search. I wanted a tripod that would extend above 50 to 60 inches so I could shoot down into an engine bay or onto a workbench. I have used ball-head tripods and have never been very happy with them, so I wanted a more traditional three-way head. Originally, I was eyeballing the MeFoto (mefoto.com) RoadTrip. It's pretty compact and actually looked cool because it was made from anodized aluminum. It is available in different colors and it can be converted into a monopod too. After realizing that I hate a ball head and excessive multiple leg extensions, the MeFoto RoadTrip fell out of favor. I ended up with a Manfrotto (manfrotto.com) MK290XTC3-3WUS 290 Xtra Carbon Fiber Tripod Kit with an 804 three-way pan and tilt head. The carbon fiber makes it fairly lightweight, but it's certainly not a good tripod for hiking. It's not very compact because it only has two leg extensions.

For a compact off-road/hiking tripod with a ball head, take a look at the MeFoto BackPack-

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STEERING RAM LENGTH

Q I'm doing a full hydraulic steering conversion on my 4x4 with a single-ended ram. How do I decide what length and size ram I need? I have a 10-inch ram on it now and seems too long. I'm using the stock tie rod location on a Dana 60 front axle.

KEN BASILE

VIA FACEBOOK.COM/JOHNCAPPA4X4

A The single-ended steering ram length for a ram assist or full hydraulic system depends on the front axle you are using and the steering assembly. If you are mounting the ram to the stock tie rod and using the stock tie rod mounting locations, generally a Dana 44 requires either a 6 or 8-inch ram. A Dana 60 needs an 8-inch ram. And a Rockwell 2 ½-ton needs a 9-inch ram. Too long of a ram can damage the knuckles and other steering components. You can easily check the steering throw on your axle. Mark a spot on the tie rod and axlehousing. Cycle the steering to the left and right and measure the total distance the tie rod travels. This is the length of ram you need. A tie rod and ram mounted to high-steer arms that are shorter or longer than stock will require a different ram length than a tie rod mounted in the stock location. Always measure the steering throw of your proposed ram mounting location before ordering a steering ram.

In most cases you'll probably want at least a 2-inch diameter ram for a full hydraulic steering system. The 1¾-inch and larger diameter rams generally require more fluid volume than a stock power steering system can deliver and may call for a steering pump upgrade to maintain a light and quick steering wheel feel. If the steering feels slow and labored, it's likely that your pump can't keep up with the steering ram fluid requirements. Fortunately, companies like Howe Performance Power Steering (howeper-



formance.com) PSC (pscmotorsports.com) and West Texas Off Road (westtexasoffroad.homestead.com) specialize in steering system upgrades for off-road vehicles. The companies can assemble a ram-assist or full hydraulic system to suit your needs. Individual parts are also available if you only want a pump upgrade.



IFS ISSUES

Q I have a '89 Chevy IFS 4x4, and I can't seem to keep a front end together without wearing out an idler arm. I go through the front end once a month and constantly have to repair something. I'm only running 31-inch tires. When I run 33s it's not as bad. I'm lost at this point. I would like to switch to a solid front axle with minimal parts to buy.

WILLIAM KUHFUS
VIA EMAIL

A The worn parts you are experiencing seem excessive. However, driving style could have a lot to do with your problem. Regardless, you and your truck sound like a prime candidate for a leaf-sprung solid axle swap. A solid axle is generally more durable than a factory IFS suspension. Offroad Design (offroaddesign.com) offers a solid axle swap kit that allows the installation of one of several different solid front axles into a '88-'98 GM IFS truck. You can pull the axle and springs yourself from a wrecking yard. If you plan on sticking with tires that are 35 inches or smaller, you can save some money and make use of a Dana 44 ½-ton front axle. For more extreme off-roading and tire sizes, you'll likely want to step up into a more expensive Dana 60 1-ton front axle.

The kit is completely bolt-on and utilizes your factory driver-drop transfer case, provided you select the proper solid front axle. If you are looking for more suspension flex, you can opt for the kit that utilizes longer front leaf springs. **FWW**

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CALENDAR

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April 2

What: Getting Started Off-Road Driving
Where: Gorman, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 3

What: Day 2 Getting Started Off-Road Driving
Where: Mojave, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 8

What: Death Valley Adventure
Where: Ridgecrest, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 8-10

What: Trucks Gone Wild Weekend at Slopoke
Mud Boggin
Where: Eastman, Georgia
Hosted by: Trucks Gone Wild
Info: trucksgonewild.com

April 16

What: Wilderness First Aid Course
Where: Gorman, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 16

What: Getting Started Off-Road Driving
Where: Borrego Springs, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 17

What: Getting Started Off-Road Driving
Where: Borrego Springs, California
Hosted by: Badlands Off-Road Adventures
Info: 310/613-5473, 4x4training.com

April 21-23

What: 25th Arch Canyon Jeep Jamboree
Where: Blanding, Utah
Hosted by: Jeep Jamboree USA
Info: 530/333-4777, jeepjamboreeusa.com

WHERE TO SEND SUBMISSIONS

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every reader, but we do read everything.



April 21-24

What: Trucks Gone Wild Invades Louisiana Mudfest

Where: Colfax, Louisiana

Hosted by: Trucks Gone Wild

Info: trucksgonewild.com

April 23

What: Winching Clinic

Where: Mojave, California

Hosted by: Badlands Off-Road Adventures

Info: 310/613-5473, 4x4training.com

April 27-30

What: 12th Tennessee Mountains Jeep Jamboree

Where: Oak Ridge, Tennessee

Hosted by: Jeep Jamboree USA

Info: 530/333-4777, jeepjamboreeusa.com

April 29-May 1

What: Trucks Gone Wild at Vermonster 4x4

Where: Rutland, Vermont

Hosted by: Trucks Gone Wild

Info: trucksgonewild.com

April 30-May 1

What: Big Dogs Ice Breaker

Where: Gore, Virginia

Hosted by: Big Dogs Offroad

Info: bigdogsoffroad.com

April 30

What: Monster Truck Nationals

Where: State College, Pennsylvania

Hosted by: Family Events

Info: monsternationals.com

April 30

What: Shakedown Run

Where: Gilbert, Minnesota

Hosted by: Iron Range Offroad

Info: ironrangeoffroad.com **FW**

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Apr. '01: We Drive The New IRS Ford Explorer

The all-new third-gen Ford Explorer debuted as a '02 model, and we trotted out a First Look at the SUV in the Apr. '01 issue of *Four Wheeler*. This new Explorer was a significant change from its predecessor. It continued to be a body-on-frame design with independent front suspension (IFS), but the body of the five-door was 2½ inches wider overall, the vehicle had a 2-inch-longer wheelbase and an independent rear suspension (IRS). The change from solid axle and leaf springs to IRS was a first for Explorer, and it allowed Ford engineers to integrate a third-row seat (also a first for Explorer) that folded flat to the floor when cargo space was needed.

Two engines were available: a 4.0L V-6 that made 210 hp and 250 lb-ft of torque or a 4.6L V-8 that made 240 hp and 280 lb-ft of torque.

Interestingly, the V-6 could be paired with a five-speed manual transmission. The V-8 engine was mated to a five-speed automatic that was "sealed from the factory with 11 quarts of a semi-synthetic blend of transmission fluid that should not require service for the first 150,000 miles," we were told.

The four-wheel-drive system was "refined" for the '02 Explorer in the sense that the Control Trac system was given its own dedicated electronic controller, which was designed to do a better job of managing the four-wheel-

drive system when in 4x4 Auto mode. The '02 Explorer was fit with a two-speed transfer case with 2.48:1 low-range ratio.

We wrote that the Explorer was quieter on the inside than its predecessor and the extra 2½ inches of width gave it a more open feel. When it came to driving impressions we wrote, "Our off-road expedition consisted of a snowy and muddy road that the Explorer handled fairly easily. It did a good job of finding traction and motored up most obstacles. However, the trail didn't test the articulation

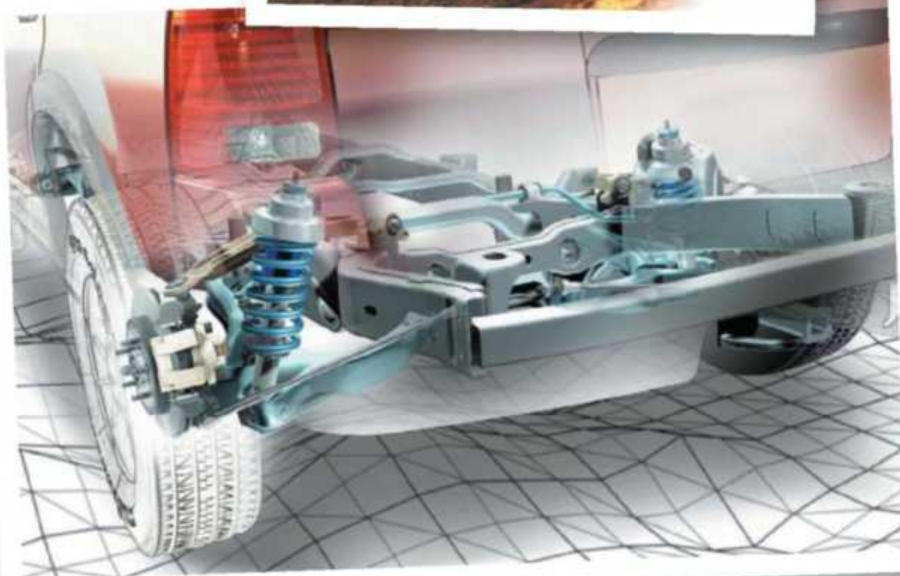


“THIS NEW EXPLORER WAS A SIGNIFICANT CHANGE FROM ITS PREDECESSOR.”

of the Explorer, which we suspect is limited. While the off-roading was easy, it was probably the most trail work any sane person would do with a brand-new SUV." We also wrote that we weren't sold on the Explorer's IRS due in part to a lack of wheel travel.

The '16 Explorer is now in its fifth-generation of production, and it's dramatically different than previous generations of Explorer. It uses a unibody structure and available all-wheel drive (no two-speed T-case). However, Ford's website says "When the pavement ends, the adventure begins," when referring to the Explorer, which indicates that the vehicle is being marketed as a capable on- and off-road vehicle. An example of this is the Explorer's available Hill Control and Terrain Management System.

Over the years we've had some great off-roading trips in first and second-generation Explorers. We're getting seat time in the '16 Explorer soon and will report back, good or bad, on Ford's newest version of the storied Explorer nameplate. **FW**





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